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THIS JOURNAL *publishes (in the original English or French, or in translation from Hebrew) papers from contributors in Israel and other countries on the following subjects: ancient—especially biblical—history and archaeology; the history and archaeology of later periods; the geography, geology, soil science, and natural history of Israel and the Near East.* The Editors are not responsible for opinions expressed by contributors.

Israel Exploration Journal

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The Cities of the Territory of Dan*

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THE results of the archaeological survey carried out by Naveh[1] at Khirbet el-Muqanna' mark an important advance towards the solution of one of the most difficult problems encountered in the study of the historical topography of Palestine, namely the identification of the Philistine city of Ekron and also of the Danite cities in the region of the Valley of Sorek (Wadi Ṣarar). From this systematic survey, which was accompanied by accurate drawings of the surface remains of buildings and the collection of potsherds from all over the site, a fairly clear picture emerges of the character of the city and its fortifications. It seems probable—in so far as any definite conclusions can be reached solely on the basis of a systematic archaeological survey, without any actual excavation—that the city was founded at the beginning of the Early Iron Age (twelfth century B.C.), that it reached the height of its prosperity and power in Early Iron Age III and the Middle Iron Age (tenth to sixth centuries B.C.), and that it declined and finally became a heap of ruins in the Persian period, possibly in its early part. Not only do these data conform admirably with what we are told of Ekron in the Old Testament, but it is particularly noteworthy that the site in question is of larger dimensions than all the other Iron Age sites that have so far been discovered in Palestine. The area of the walled city at Khirbet el-Muqanna' is approximately 40 acres, and in addition, outside the walls visible on the surface, there are various structures which appear to be the

* This paper was published in Hebrew in *BIES*, 24, 1959, pp. 8-16,

[1] J. Naveh: Khirbat al-Muqanna'-Ekron, *IEJ*, 8, 1958, pp. 87-100, 165-170.

remains of towers and outlying quarters. Other specially notable relics are those of the large edifice on the northern spur which rises above the rest of the tell (perhaps the site of the acropolis), and those of the city gate and its towers in the centre of the southern wall. It should further be mentioned that Khirbet el-Muqanna' stands at the junction of several important roads and that all around it there are copious underground springs and fertile soil.

Thus the archaeological data and the evidence from biblical and non-biblical sources contemporary with the Old Testament period all point to the identification of Ekron with Khirbet el-Muqanna', as proposed by Naveh, despite the difficulties involved in the location of the Maccabean estate Ekron and of the Jewish village of Ekron in the time of Eusebius.[2] This automatically disposes of previously suggested identifications of Ekron and Eltekeh, including Albright's proposal to identify Ekron with Qaṭra[3] and Eltekeh with Khirbet el-Muqanna',[4] and likewise the proposal made by the writer of this article to identify Ekron with Tell Buṭashi.[5] For first of all, it is inconceivable that Ekron, which was one of the five principal Philistine cities and a large centre of population, should have been much smaller and much less important than Eltekeh or any other city in the region of the Sorek Valley; and, moreover the identification of Ekron with Khirbet el-Muqanna' warrants the further identification of Timnah with Tell Buṭashi,[6] thus providing a clear and consistent picture of the historical topography of the whole region. In particular, it clarifies the description of the northern border of the territory of Judah which ran along

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[2] Cf. Naveh, *ibid.*, pp. 166-170. It is to be hoped that the remains of the later city of Ekron will one day be discovered in the neighbourhood of Khirbet el-Muqanna'. The village of Gallaa, mentioned by Eusebius (*Onomasticon*, ed. Klostermann, p. 72, lines 6 ff.) as being near Ekron is the abandoned Arab village of Jilya, one and a half kilometers south-east of Khirbet el-Muqanna'.

[3] W. F. Albright: Contributions to the Historical Geography of Palestine, *AASOR*, 2-3, 1923, pp. 1-7.

[4] W. F. Albright: Researches of the School in Western Judaea, *BASOR*, 15, 1924, p. 8; idem, *BASOR*, 17, 1925, pp. 5-6; idem, *JBL*, 59, 1940, pp. 340 ff.

[5] The Campaign of Sennacherib in Judaea, *EI*, 2, 1953, p. 171 (Hebrew); cf. *BIES*, 16, 3-4, 1951, p. 51. Tell Buṭashi is in the Sorek Valley, about 7.5 km. north-west of Beth-Shemesh and about 5 km. from Khirbet Tibneh. The area covered by the tell is about 4 acres, and the remains found in it testify to the existence of a large settlement there in the Iron Age and a smaller one in the Hellenistic and Roman periods. The tell was examined by the writer of this article together with Dr. J. Kaplan, and the proposed identification with Ekron was put forward on the basis of this examination.

[6] See Naveh, *op. cit.* (above, n. 1), p. 167; Y. Aharoni: The Northern Boundary of Judah, *PEQ*, 90, 1958, pp. 28-30. Z. Kallai: The Town Lists of Judah, Simeon, Benjamin and Dan, *VT*, 8, 1958, p. 145.

the Sorek Valley: '... and went down to Beth-shemesh, and passed on to Timnah. And the border went out into the side of Ekron northward; and the border was drawn to Shicron,[7] and passed along to mount Baalah,[8] and went out unto Jabneel; and the goings out of the border were at the sea' (Joshua xv, 10-11).

Any examination of the problems connected with the other cities of the Sorek Valley region must start from a study of the list of Danite cities given in Joshua xix, 40-46. This list contains four groups of towns, or to be more precise, four districts, which together comprise 'the territory of Dan' (see Fig. 1):

(I) Zorah, Eshthaol, and Ir-Shemesh (=Beth-Shemesh)—in the north-eastern part of the Shephelah in the area round the point at which the Sorek Valley debouches from the Judean hills;

(II) Shaalbim, Ajalon, Jethlah, Elon (=Elon-beth-hanan, 1 Kings iv, 9)—in the region of the Valley of Ajalon;

(III) Thimnathah (Timnah), Ekron, Eltekeh, Gibbethon, and Baalath—in the region of the Sorek Valley and to the north of it;

(IV) Jehud (in the LXX Azor), Bene-Berak, Gath-Rimmon, and Me-Jarkon and Rakkon with the border before Japho—in the region of Wadi Muṣrara and up to the Yarkon and the confines of Jaffa.

The first district consists of territory occupied by the tribe of Dan during the period of the Israelite conquest of Canaan (Zorah, Eshthaol), in close proximity to Timnah which was a Philistine city in Samson's days (Judges xiii, 1,25; xiv, 1 ff.). Also included in this district was the Israelite city of Beth-Shemesh (1 Sam. vi, 12). The second district had a mixed population during the period of the conquest, and the struggle for mastery between the Israelite and non-Israelite elements continued down to the time of David: 'And the Amorites forced the children of Dan into the mountain: for they would not suffer them to come down to the valley. But the Amorites would dwell in mount Heres,[9] in Ajalon, and in Shaalbim, yet the hand of the house of Joseph prevailed,

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[7] The location of this ancient settlement is beset with difficulties. The most recent proposal is that of Aharoni, *ibid.*, p. 30, who would identify it with the small Tell el-Ful; cf. the comments of J. Kaplan, *BIES*, 17, 1953, p. 138; *BIES*, 21, 1957, p. 206 (Hebrew).

[8] Generally agreed by most scholars to be on the ridge of hills above el-Mughar; cf. below, p. 70 on Baalath.

[9] It has been proposed to identify *'Har Ḥeres'* with Beth-Shemesh, but there is no warrant for such a conjecture. On Mount Ḥeres, see Z. Kallai, in *Encyclopaedia Biblica*, II. Jerusalem, 1954, col. 853 (Hebrew).

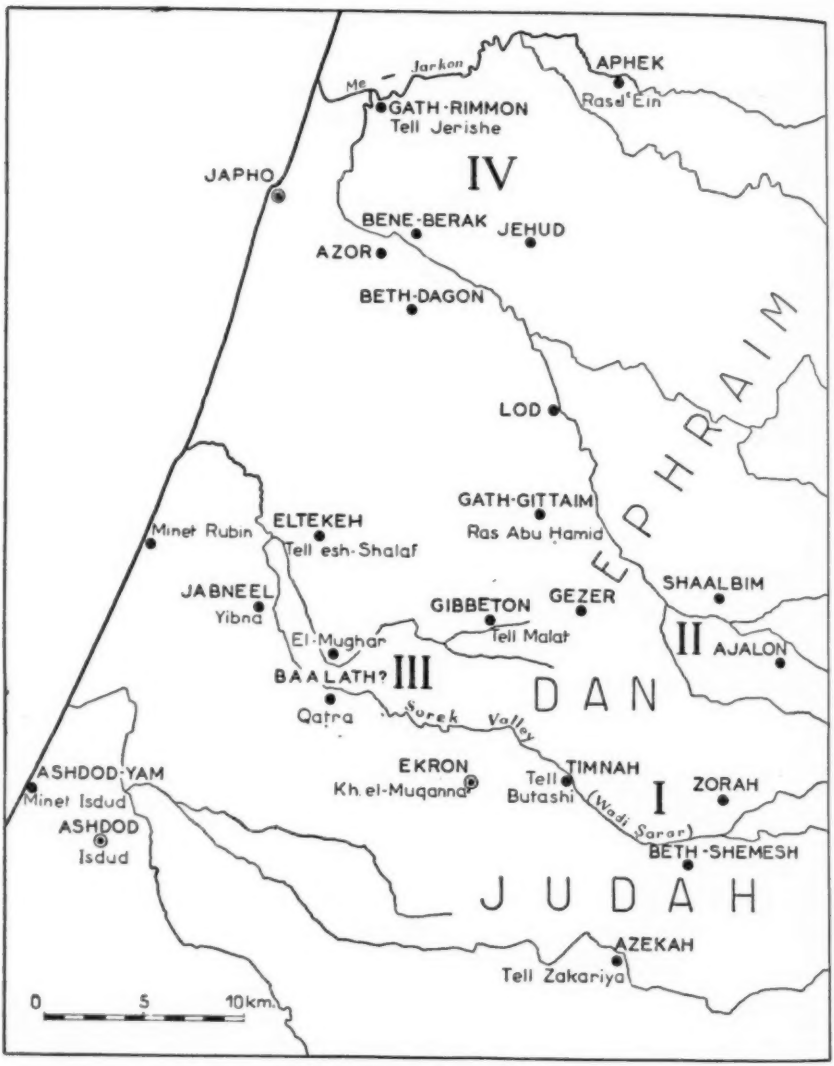

Fig. 1. The territory of Dan.

so that they became tributaries' (Judges i, 34-35).[10] These two districts, together with the non-Israelite cities that subsequently became Israelite, in David's

[10] An enigmatic piece of information is preserved in 1 Sam. vii, 14 about the cities that had at some time been captured by the Philistines and were later regained for Israel by Samuel: 'and the

reign formed a single administrative unit, namely the second in the list of the nomes into which Solomon is said to have divided the country at the beginning of his reign (1 Kings iv, 9).[11] The other two districts in the territory of Dan would seem to have been added to the Israelite kingdom as a result of the extension of its borders westwards, at the expense of the areas under Philistine control. This expansion apparently took place after the conquest of Gath (=Gittaim), and after the annexation of Gezer and its dependencies to the Israelite kingdom at the beginning of Solomon's reign.[12] Moreover, the inclusion of Ekron in the list of Danite cities is no doubt to be interpreted as indicating that the kingdom of Ekron, which was apparently co-terminous with the third district, had accepted the suzerainty of Israel and was, to all intents and purposes, annexed to Solomon's kingdom. The assumption that the list is from the time of Solomon is borne out by both the biblical sources and the archaeological data. First of all we must note that, after the division of the monarchy, the first district—i.e. the cities of Zorah, Eshthaol and Beth-Shemesh—formed an integral part of the kingdom of Judah. This means that at a certain period—apparently in the latter part of Solomon's reign—this district was detached from the territory of Dan and joined to Judah, a process that was accompanied by the settling of Judahites in its cities.[13] It is also worth noting that

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coasts thereof did Israel deliver out of the hands of the Philistines. And there was peace between Israel and the Amorites.' The mention of Ekron and Gath (=Gittaim) in this passage suggests that there is here a reference to the obscure events connected with the struggle between the tribe of Ephraim and the inhabitants of Gath, in the period before the Israelite Monarchy; cf. B. Mazar Gath and Gittaim, *IEJ*, 4, 1954, pp. 227-235.

[11] In a yet unpublished study of the administrative division of the Israelite kingdom, I have tried to prove that the order in which the nomes are listed in 1 Kings iv actually reflects the sequence of Israelite conquests, the gradual expansion of the kingdom on both sides of the Jordan, and finally the severance of the territory of Benjamin from Ephraim in the reign of David. This view of mine has been accepted by S. Yeivin (see *s.v.* David in *Encyclopaedia Biblica*, II. Jerusalem 1954, cols. 632-633 [Hebrew]), and also Kallai, *op. cit.* (above, n. 6), p. 160, n. 3; cf. F. M. Cross & G. F. Wright: The Boundary and Province Lists of the Kingdom of Judah, *JBL*, 75, 1956, p. 216.

[12] The biblical sources leave no room for doubting the presence of Ephraimites in the territory of Gezer at the time of the occupation of Canaan, and its consequent annexation by Solomon; cf. Joshua xvi, 3, 10; Judges i, 29; 1 Chron. vii, 28. In Joshua xvi, 10 it is stated that 'they drove not out the Canaanites that dwelt in Gezer: but the Canaanites dwell among the Ephraimites unto this day, and serve under tribute'. In the list of the Levitical cities, Gezer is mentioned amongst the cities of Ephraim (Joshua xxi, 21). On Gath (Gittaim) see my article (above, n. 10); *Encyclopaedia Biblica*, II. Jerusalem, 1954, col. 574 (Hebrew).

[13] Zorah and Eshthaol are included in the cities of the second district of Judah in Joshua xv, 33. Moreover, the families of the Zorathites and Eshthaolites, mentioned in 1 Chron. ii, 53; iv, 2 as coming from Kirjath-Jearim, were no doubt Judahite clans which had settled in Zorah and Eshthaol.

Gibbethon, which is mentioned amongst the cities of the third district and was one of the Levitical cities in the territory of Dan, had already in the time of Jeroboam's dynasty become a Philistine stronghold ('Gibbethon, which belonged to the Philistines', 1 Kings xvi, 15). Perhaps a similar conclusion about the date of the list may be drawn from the mention of Baalath in the third district (Joshua xix, 44—after Eltekeh and Gibbethon), if it is true, as has been conjectured, that the reference is to the fortified city of that name built by Solomon, at the same time as Gezer and Beth-Horon, to defend the approach routes to Jerusalem from the west (1 Kings ix, 17-18).[14] Finally, it is worth remarking that Gath-Rimmon, which appears also in the list of the Levitical cities in the territory of Dan and which I have proposed to identify with Tell Jerishe, was razed to the ground during Shishak's campaign and never rebuilt.[15]

However, before we can finally determine the date of the list of Danite cities in Joshua xix, the historical background of the list of the Levitical cities in Joshua xxi and 1 Chron. vi requires clarification. If it is correct to assume that the Levitical cities were in fact administrative and fiscal centres built by Solomon,[16] in which he settled Levites 'for all the work of the Lord and for the service of the king' (1 Chron. xxvi, 30-32), this would also be an indication of the date of the Danite city list. For all the four Levitical cities in the territory of Dan—Ajalon, Gibbethon, Eltekeh and Gath-Rimmon—are mentioned in the list in question (Joshua xxi, 23-24), while, on the other

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Rehoboam fortified Zorah as one of the Judean siege cities (2 Chron. xi, 10). As for Beth-Shemesh, its connection with Judah is evident from the list of the Levitical cities (Joshua xxi, 16), and it is also explicitly described as belonging to Judah in 2 Kings xiv, 11-13 (in the reign of Amaziah) and in 2 Chron. xxviii, 18 (in the reign of Ahaz). This raises the question of the date at which the Judean city at Beth-Shemesh (stratum IIa) was built. As against the view expressed by Wright in E. Grant & G. E. Wright: *Ain Shems Excavations*, V. Haverford, 1939, p. 15; Cross & Wright, *op. cit.* (above, n. 11), pp. 215-217, that it was started at the beginning of David's reign (cf. Kallai, *op. cit.* [above, n. 6], pp. 149 ff.; Y. Aharoni: The Province-list of Judah, *VT*, 9, 1959, pp. 244-246), I am inclined to bring its date down to the latter part of Solomon's reign. In my opinion, this was the Levitical city of Beth-Shemesh in Judah. For the most recent view, see Y. Aharoni: The Date of Casemate Walls... *BASOR*, 154, 1959, pp. 35-39.

[14] There is no doubt that the site of Baalath must be sought in the neighbourhood of Mount Baalah. Z. Kallai has therefore proposed (*BIES*, 17, 1952, p. 63 [Hebrew]) to identify it with al-Mughar, while Aharoni, *op. cit.* (above, n. 6), p. 30, has tentatively suggested locating it at Qaṣra which had a settlement of considerable size in the Iron Age.

[15] Cf. B. Maisler (Mazar): The Excavations at Tell Qasile, *IEJ*, 1, 1950-51, p. 63, n. 6.

[16] For this conjecture of the writer's, following Klein and Albright who assign the list to the period of the United Monarchy, see my article: The Cities of the Priests and the Levites, *VT* Supplement, 7, 1960.

hand, there is evidence that after the division of the monarchy the Levites left their cities in Israel and took up residence in Judah (2 Chron. xi, 14).

It follows from the foregoing discussion that the administrative division of the country described in 1 Kings iv actually took place in the time of David, but was assigned to the beginning of Solomon's reign; whereas the list of Danite cities in Joshua xix, and likewise the list of Levitical cities in Joshua xxi, both date from the time of Solomon, the period of the monarchy's greatest glory. At the end of Solomon's reign the territory of Dan was reduced in extent by the annexation of the first district to Judah; while after the division of the monarchy (i.e. in the reigns of Jeroboam and Rehoboam), the third and fourth districts ceased to be under Israelite rule, no doubt as the aftermath of the campaign of Pharaoh Shishak[17] and the consequent weakening of the kingdom of Israel. Dan thus lost its status as a tribal and administrative unit in the heart of the country. The Danites were assimilated into other Israelite tribes —Judah, Benjamin and Ephraim—, and the name Dan was henceforward used exclusively of the city Laish-Dan and of the district around it in the north of the country which was part of the territory of Naphtali. This change, incidentally, is reflected in the Blessing of Moses (Deut. xxxiii, 22), as well as in other biblical passages. The second conclusion to be drawn from the discussion of the lists of Danite cities and of the Levitical cities in the territory of Dan is that in any proposed identification of the cities mentioned in these lists with tells or ruins, the sites chosen must be shown to contain remains, especially sherds, from the Early Iron Age III (tenth century B.C.).

One of the most important of the cities in the third district of Dan was Gibbethon, which is also mentioned in the list of Levitical cities. Von Rad long ago persuasively suggested that Gibbethon should be identified with Tell Malat, about 5 km. west of Gezer, on the basis of an analysis of the biblical passages referring to these two fortified cities.[18] In this prominent tell, which stands on an isolated height dominating the whole surrounding district, pot-sherds have been found from all the historical periods, especially from the Early and Middle Iron Ages.[19] Confirmation of von Rad's proposal would also seem to be provided by the records of Sargon. In the annals of this Assyrian

[17] On his march, Shishak took and sacked—besides other cities—Gezer and Ajalon. The former remained in ruins, while Ajalon was rebuilt by Rehoboam as one of his siege cities (2 Chron. xi, 10).

[18] See G. von Rad, *PJb*, 29, 1933, pp. 30 ff.

[19] See *BIES*, 16, 3-4, 1952, pp. 49-50 (Hebrew).

monarch we are informed that, in the course of his military campaign against the kingdom of Ashdod in 712 B.C., he captured Gath (Ras Abu Ḥamid near Ramle), Ashdod, and Ashdod-Yam. Moreover, as Tadmor has shown,[20] it is this same campaign that is recorded on the reliefs from the royal palace at Khorsabad which portray the capture of the cities Gab-bu-tu-nu (i.e. Gibbethon) and 'A-am-qa-[ar]-ru-[na] (i.e. Ekron).[21] These data enable us to reconstruct the course of the campaign with a high degree of certainty. Most probably the Assyrian army took the *via maris*, which ran along the Sharon plain from Aphek to Lod, and then continued its advance through Gath (Ras Abu Ḥamid) and Gibbethon (Tell Malat) to Ekron. At this point some of Sargon's forces turned westward to attack Ashdod, which was captured together with Ashdod-Yam, while another column split off south-eastwards into the Judean foothills and reduced Azekah.[22] Assuming that it is correct to infer from this evidence that the site of Gibbethon lies between Gath and Ekron, we have here a further proof of the identification of Gibbethon with Tell Malat. This conjecture also enables us better to understand the constantly repeated attempts made by the Israelite kings (1 Kings xv, 27; xvi, 15) to gain control of this city, which dominated a vital line of communication and was one of the strongholds of the kingdom of Ekron.

The problems involved in the identification of Eltekeh (in the LXX Ἐλθεκω), which was also in the third district of the territory of Dan and one of the Levitical cities (Joshua xix, 44; in Joshua xxi, 23: אלתקא), are more difficult to solve. The main source of our information about the location of Eltekeh is the Annals of Sennacherib[23] in which that Assyrian monarch gives a detailed description of his great military campaign to Palestine in the year 701 B.C. In contrast to the forces of his predecessor, Sargon, Sennacherib's troops entered Palestine from the Phoenician coast, apparently advancing along the coastal road through the province of Dor as far as the district of Jaffa, which was at that time subject to the king of Ashkelon. After taking the cities of Jaffa, Bene-Berak, Azor, and Beth-Dagon, Sennacherib appears to have continued his march southwards by the shortest and easiest route to Ashdod,

[20] H. Tadmor: The Campaigns of Sargon II of Assur, *Journ. of Cuneiform Studies*, 12, 1958, p. 83.
[21] See M. El-Amin: Die Reliefs mit Beischriften... *Sumer*, 9, 1953, pp. 36-40, and also Tadmor, *op. cit.* (above, n. 20), p. 83, n. 243.
[22] See Tadmor, *ibid.*, pp. 81 ff.
[23] See the translations of D. D. Luckenbill: *The Annals of Sennacherib*. Chicago, 1924; A. L. Oppenheim, *apud* J. B. Pritchard, ed.: *Ancient Near Eastern Texts*. Princeton, 1955, pp. 287-288; and cf. my survey in *EI*, 2, 1953, pp. 172 ff. (Hebrew).

in order to meet the Egyptian reinforcements which the leaders of the anti-Assyrian confederacy, Hezekiah king of Judah and Zidqa king of Ashkelon, had summoned to their aid. In the decisive engagement that took place on the battlefield of Altaqu (i.e. Eltekeh), Sennacherib inflicted a severe defeat upon the Egyptians. He then reduced Eltekeh and Timnah and stormed Ekron, where the leading nobles of the city had seized power in the political confusion prior to Sennacherib's campaign, joined the anti-Assyrian alliance and handed over their King Padi, who had remained loyal to Assyria, to Hezekiah king of Judah. After these victories, the Assyrian army advanced from the region of the Sorek Valley into the Judean foothills, and the Assyrian invasion of the kingdom of Judah had begun.

From Sennacherib's description, the site of Eltekeh must be on the line of the main highway running from the environs of Jaffa and Beth-Dagon southwards to Philistia, and close to the point at which the road eastwards, to the cities of the Sorek Valley (including Timnah) and Ekron, branches off it. There is no warrant for the supposition that both the Assyrian and the Egyptian armies followed a route to the east of this main highway.

When we set about locating the exact position of Eltekeh in accordance with the Annals of Sennacherib and the statements of the Old Testament, the first place to claim our attention must be an important site on the road from Jabneel northwards to Beth-Dagon, north of the Sorek Valley and north-west of Mount Baalah, namely Tell esh-Shalaf (see Fig. 1). This tell, which covers an area of about 6 acres, is near the abandoned Arab village of Qubeibeh, about 4 km. north-east of Yibna, at the junction of two ancient roads leading out of Yibna, one of which runs north to Beth-Dagon, while the other turns off to Ramleh and Lod. This tell has been examined by J. Kaplan[24] who found there many potsherds from the Early and Middle Iron

[24] *BIES*, 21, 1957, pp. 202-203. I visited Tell esh-Shalaf, together with Messrs. J. Naveh and Z. Kallai, on 16 August 1959. What we saw fully confirmed the findings of Dr. J. Kaplan's survey. The whole area of the tell is covered with characteristically Middle Iron Age sherds which testify to the existence of a large settlement on the site, especially in the eighth century B.C. We also picked up sherds characteristic of the Early Iron Age, including Philistine specimens (see Figs. 2-5). It is also worth remarking that the proposed identification of Eltekeh with the small ruined site at el-Mughar, which was first put forward by F. M. Abel: *Géographie de la Palestine*, II. Paris, 1938, p. 313 and has now been revived by M. Naor: Beth-Dagon and Gederoth-Kidron, Eltekeh and Ekron, *EI*, 5, 1958, pp. 127-128 (Hebrew), is totally unacceptable. Abel could produce no evidence for his conjecture but one of the names given to the *wali* at el-Mughar, viz. Abu Ṭaqah ('the father of the window'); see Ch. Clermont-Ganneau: *Archaeological Researches*, II. London, 1896, pp. 192-193.

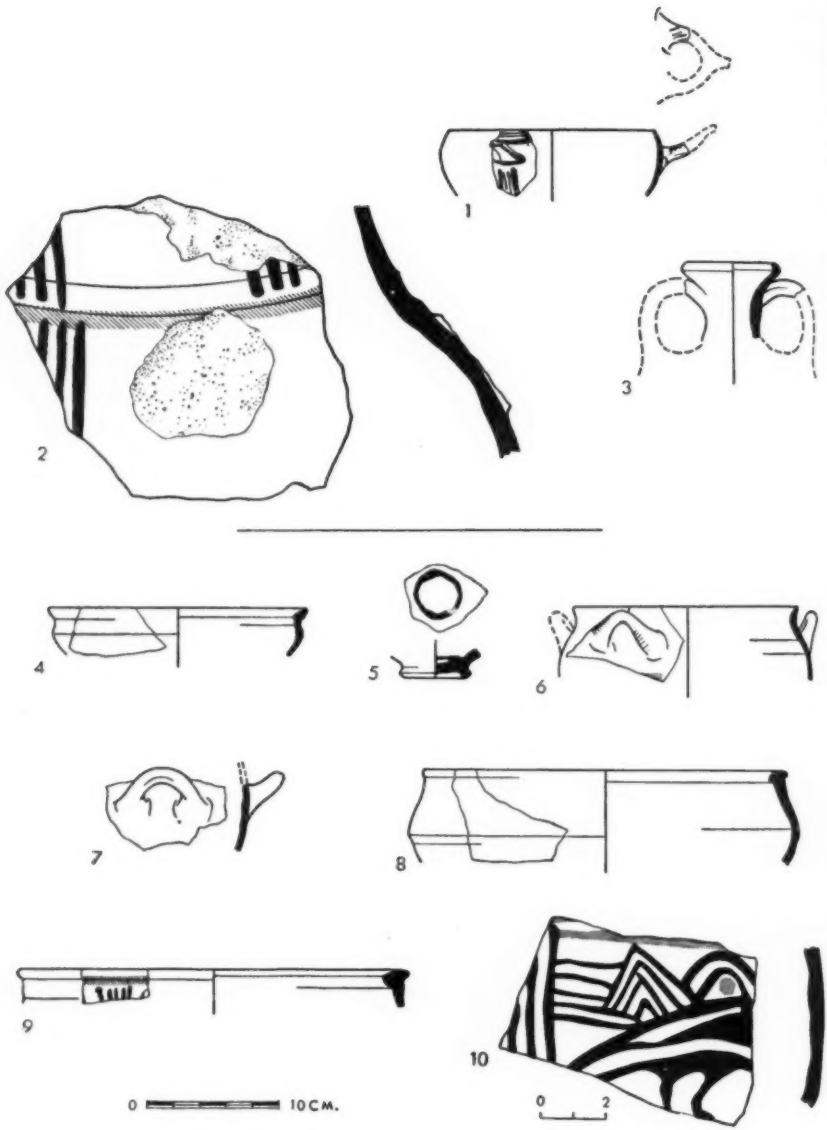

Fig. 2. 1-3: Late Bronze Age II; 4-10: Early Iron Age I-II.

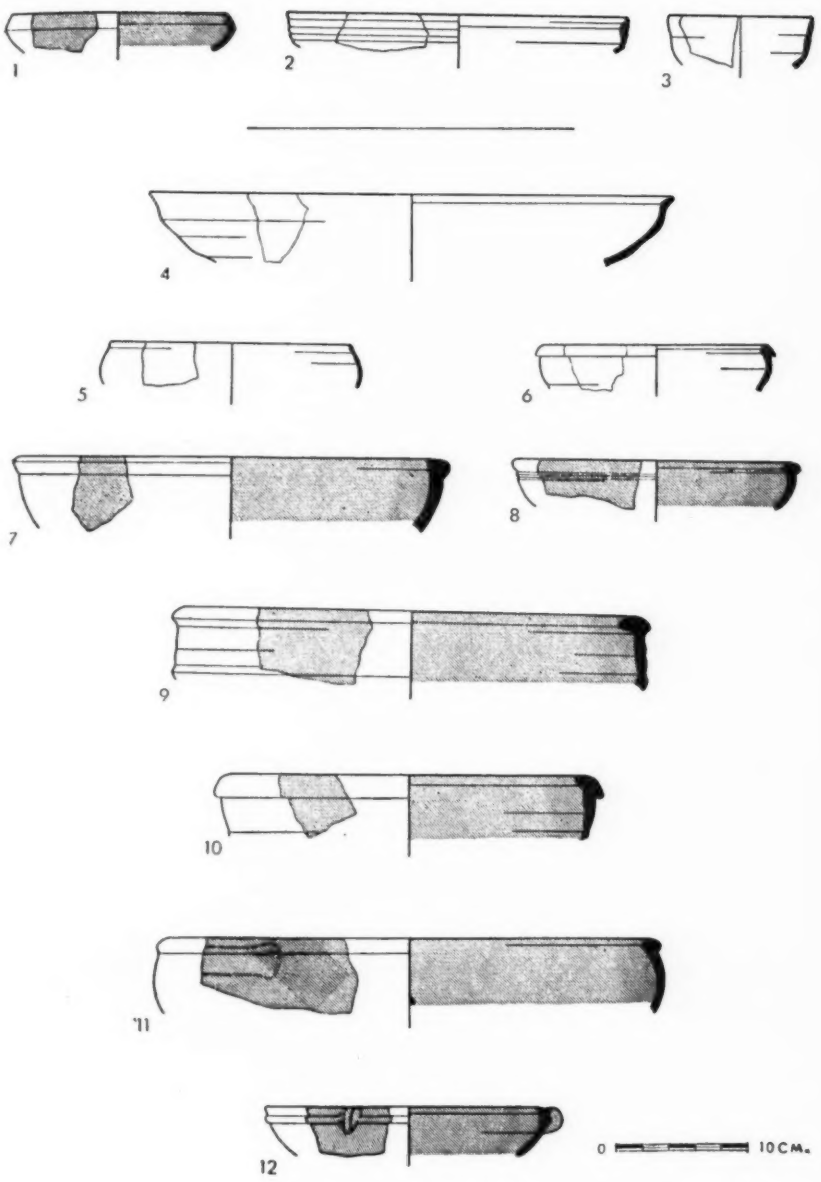

Fig. 3. 1-3: Early Iron Age III; 4-12: Middle Iron Age I.

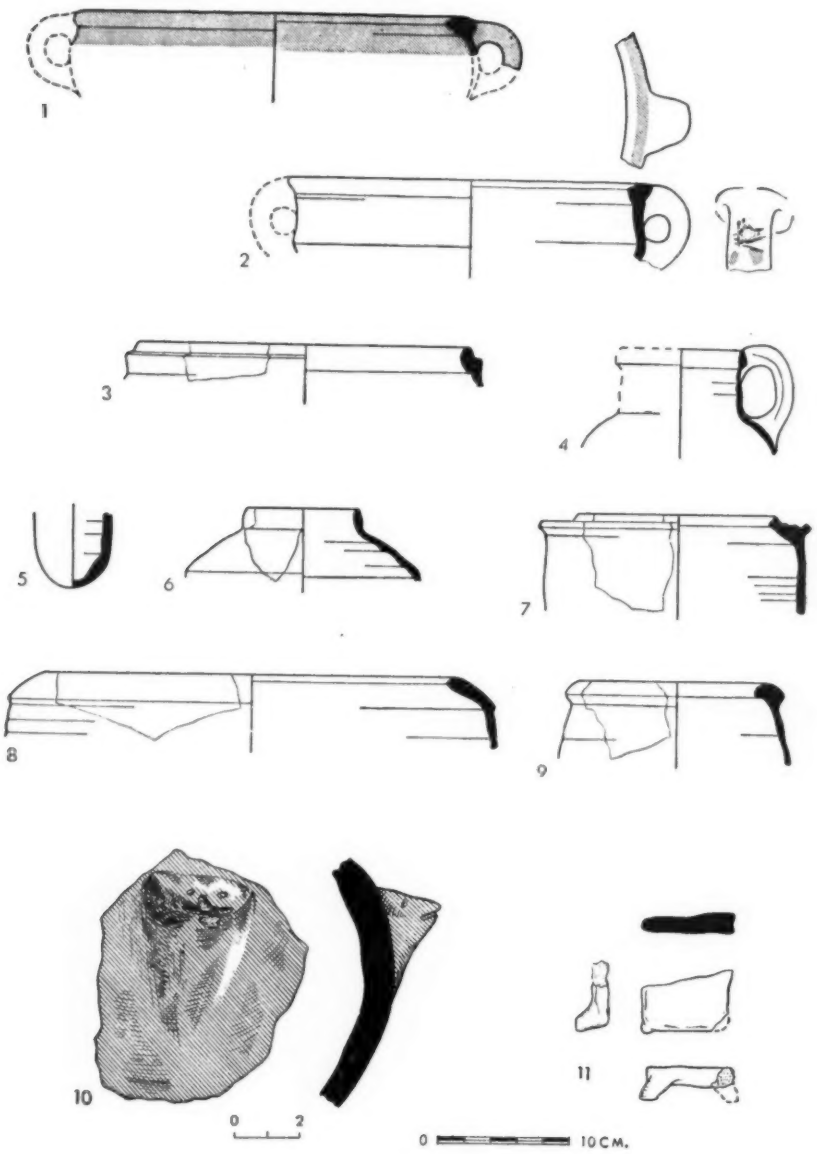

Fig. 4. 1-2: Middle Iron Age I; 3-9: Middle Iron Age II; 10: Zoomorphic vessel; 11: Clay model.

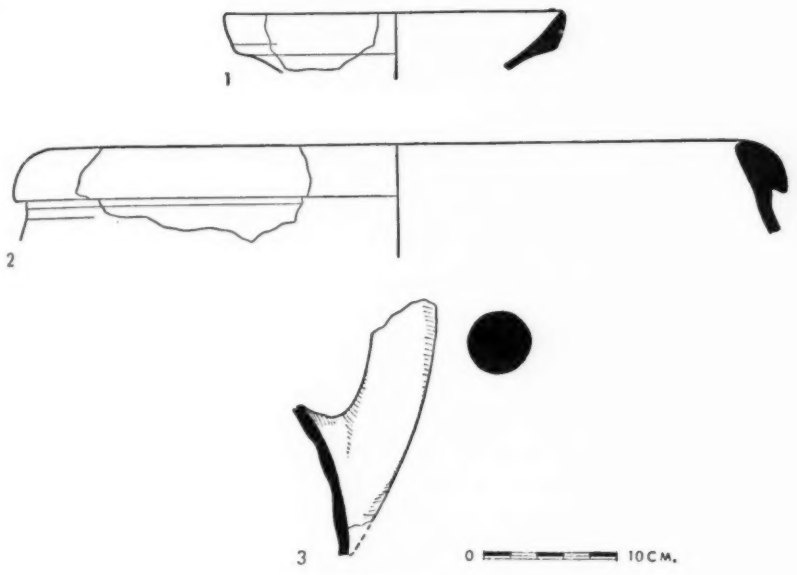

Fig. 5. Persian period.

Ages and a few from the Late Bronze Age and from the Persian and Hellenistic periods. This identification of Eltekeh with Tell esh-Shalaf, which is thus also shown to be archaeologically satisfactory, completes the mapping of the great majority of the cities in the territory of Dan known to us from the Old Testament and from non-biblical sources contemporary with the Old Testament.

The Geulah Caves, Haifa
Preliminary Report

E. WRESCHNER, M. AVNIMELECH and S. ANGRESS

A. Description of the Caves and Finds*

E. WRESCHNER

THE Geulah Caves lie in a range of hills at map ref. 1504 2446, 197 to 205 m. above sea-level on the eastern outskirts of Hadar ha-Carmel (Fig. 1; Pl. 7 A). Great quarries, abandoned in 1948, cut deeply into the hillside, and the tower of the limekiln, still standing intact, serves as a landmark to identify the site.

The hills overlooking the quarry slope steeply towards north-east to Naḥal Gibborim (Wadi Rushmieh) and to the west towards Wadi et-Tin, forming a cliff representing the boundary of the quarry, which is driven into the hill from north to south.

Cave A

This cave, untouched by the quarry operations, lies 197 m. above sea-level. It opens to the north. Its dimensions are 3 × 4 m., the present height is 2.5 m. Owing to later occupation, which continues up to the present (Pl. 7 B), a survey and sounding of the cave is impossible. On the two sides of the cave entrance to the height of 30 cm. above the present terrace floor some brown hard breccia was found, but without bones or lithic material.

About five metres from cave A to the east begins the rock-cut cliff, 60 m. in length, 10 to 15 m. high (from the present quarry floor). In the western section of this cliff at 207 m. (the level of the hill-slope), is a funnel or cleft, curving down at right angles about 10 m. and resting on the rocks of the quarry floor. This funnel is filled with earth of a greyish-brown colour. In between the rocks of the floor are two patches of hardened grey earth (see Fig. 2). The greyish-brown soil contains flints and bones; the hardened grey earth is sterile. The flint and bone-bearing layer curves from the rock-bottom in an easterly direction, filling a cavity in the cliff and becoming gradually narrower. After about 12 m.

* The author wishes to thank Prof. M. Stekelis of the Hebrew University for his valuable help and advice.

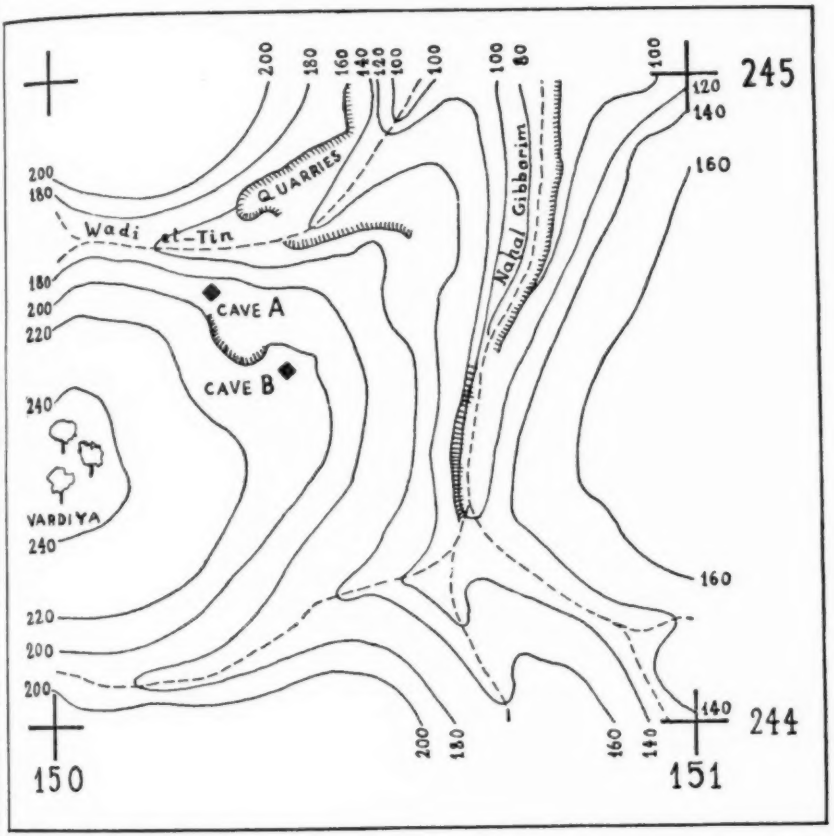

Fig. 1. Location map of Geulah Caves. 1:10,000.

its continuity is broken, and only in small rock cavities are traces of it found, leading to the entrance of cave B.

Along the foot of the cliff, at a height of 1.5 to 2 m. from the quarry floor, extends a narrow band of red-brown cave-earth, reaching a thickness of 1 m. opposite the entrance to cave B. The red-brown earth contains flint and bones in small numbers, increasing near the entrance to cave B.

Cave B

Cave B lies 205 m. above sea-level. Its entrance (Pl. 8 A) faces north, its present height being 1.5 m. The cave chamber is 4 m. deep and 3 m. broad, narrowing

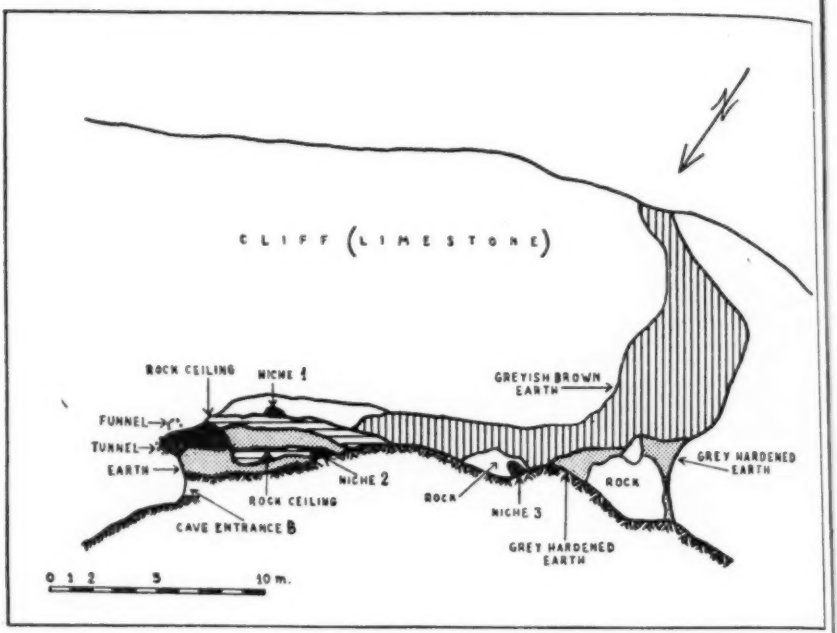

Fig. 2. Section between caves A and B.

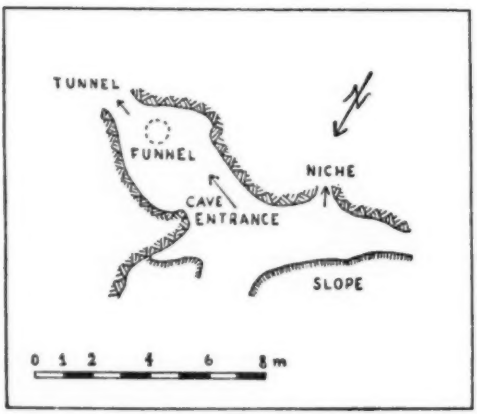

Fig. 3. Plan of cave B.

to 2 m. and forming a tunnel that leads to a great artificial chamber, created by the quarry operations. In the ceiling of the cave chamber is a funnel, 50 cm. in diameter, not leading into the open (Fig. 3; Pl. 8 B). The ceiling is 90 cm. above the present deposit level, but the depth of the deposit is still unknown.[1]

The abundance of faunal remains (see below, pp. 84-89) and the scarcity of flint tools,

[1] Meanwhile, beginning in July 1958, the author—by kind permission of the Director of Antiquities—undertook the excavation of cave B. The results may be published later.

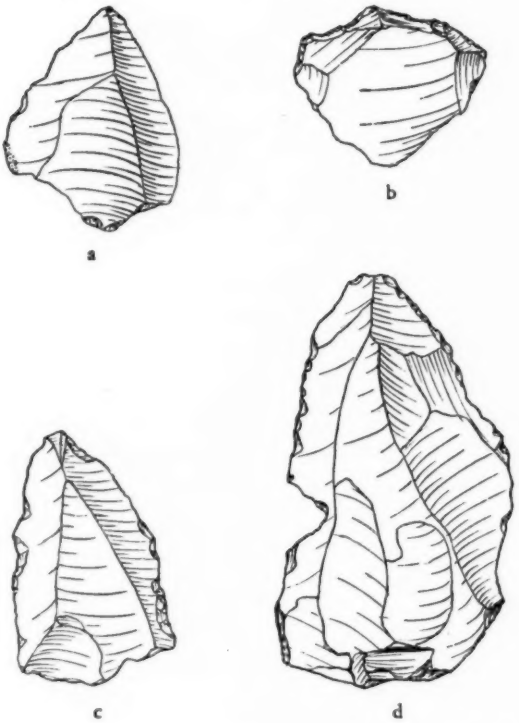

Fig. 4. Lithic finds from cave B. Scale 2:3.
a. Triangular flake. b. Scraper on broad Levallois flake. c-d. Points.

flakes, and industrial refuse on the surface inside the cave is striking. As against the great number of bones, we have so far only six flint tools (four points and two scrapers) and eight flakes (one triangular) collected on the topmost level inside the cave (see Fig. 4). The striking platform of all the tools and the flakes is faceted. Two points, two scrapers, and three flakes have a light brown, two points and five flakes a light yellow patina. Three points, one scraper, and five flakes are slightly abraded. But as all the lithic material so far collected belongs to the Levallois-Mousterian, it gives special significance to the animal remains.[2]

[2] Neolithic flint implements occur on the hills above the caves, but not in the layers shown in the drawings.

B. The Geology of Cave B

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Hebrew University, Jerusalem

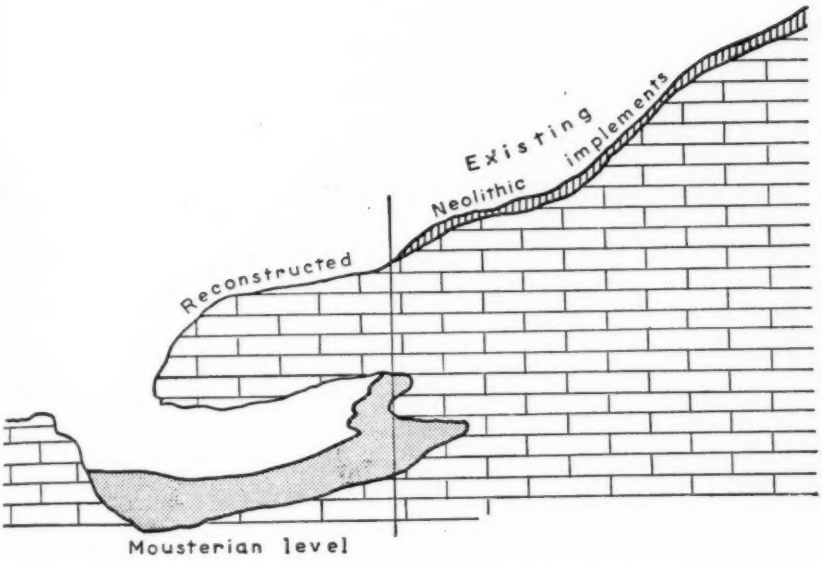
THE cave is situated within an area of recent quarries. The quarry-walls expose alternate layers of soft, white, chalky limestone and hard grey dolomite, and because of this heterogeneity shallow horizontal cavities were formed in the chalky layers, reaching sometimes the size of small caves.

The cave under consideration presents the rear portion of an old cave, the main part of which is completely destroyed by now. Two horizontal cavities are developed. In one place the hard partition layer between two chalky layers has fallen down, forming a low cave, the bottom of which is not exposed. It is filled with fine greyish-brown earthy material, containing many medium-sized fragments (average 1-2 cm. in diameter) of limestone and of dolomite, all non-rounded. The material shows no sign of stratification and is remarkably dry, probably because of the porosity of the limestone layers between which it is included; its texture is characterized by fine vertical fissures. No calcareous, limonitic or manganese concretions are present; this seems to prove that the soil in the cave was always in a similar condition of dryness. This fact is also reflected by the way the bones are fossilized: they are almost uncalcified and in a very fresh condition. The lack of stratification may also be explained by dryness during sedimentation; the original sediment was probably soil-dust swept by wind into the cave.

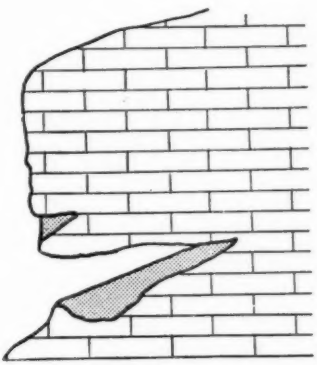
In the other cavity, which is not more than some 30-40 cm. high, the filling material consists of greyish-brown chalky soil, rich in small fragments of soft limestone. At one side this cavity is connected by a funnel-like diagonal opening to the surface; this opening too is filled with similar soil material (Pl. 8 B). In the soil of this cavity bones were found of the same kind as in the former one; several implements of the same Mousterian Age were also found there.

Evidently the filling of this cavity originated partly from soil material above the roof of the cave, but the bones and the implements were found *in situ*.

It appears from the above observations that the outcrop discovered by Mr. Wreschner comprises only the rear part of the cave which was ruined by recent quarrying or possibly a long time ago by natural factors (cf. Fig. 5a, b). It is possible that a part of the old deposit of the original cave is buried under the



a. Cave B in Neolithic times.



b. Cave B—present situation.

Fig. 5. Section of the Geulah Mousterian outcrop.

accumulation of quarry detritus in front of the cave, at a depth not much exceeding 1-1.5 m. The animal remains and flint implements found in the cave were certainly *in situ*, although the filling material of the upper cavity was partly introduced from outside. The character of the soil in the cave seems to attest dry hot climatic conditions.

C. The Vertebrate Remains from Geulah Cave B

S. ANGRESS*

Two samples of animal remains, collected within and in front of cave B at Geulah,[3] have been subjected to a first study, which was performed at the Department of Zoology of the Hebrew University under the supervision of Prof. G. Haas. The results are outlined in the following report, and—preliminary as they are—leave little doubt that a detailed and systematic investigation of the cave fauna from Geulah would be of great interest.

As to the general appearance of the material, there exists a striking contrast between the heavily crystalline bone-breccia from outside the cave, and the bone fragments from within. The latter, comprising the great majority of the material studied, are either not incrusted at all or covered by a very thin sheet of calcareous sinter, which peels off easily. This complete lack of fossilization is easily explained by the extreme dryness prevailing in the cave. We are forced to assume not only that conditions of humidity inside the cave did not change significantly after the deposition of the bones there, but also that this skeletal assemblage appears *in situ* and has not been washed in hither.

Considering the fact that the investigated material was collected at random and upon the surface of an extremely small area, the relative abundance of species represented in the sample is striking. In the following a list of the identified forms is given, as an introduction to a brief systematic survey of the material.

IDENTIFIED SPECIES[4]

Rodentia:	Hystrix sp.	*Insectivora:*	Erinaceus sp.
	Spalax ehrenbergi NEHRING	*Artiodactyla:*	Gazella decora BATE
	Gerbillus sp.		Gazella arist (?) BATE
	Lepus sp.		Dama mesopotamica BROOKE
Carnivora:	Crocuta sp.		Cervus sp.
	Alopex sp.		Capreolus capreolus LINNAEUS
	Vormela peregusna GÜLDENSTAEDT		Bos primigenius BOJ.
	Meles meles LINNAEUS		Sus scrofa LINNAEUS

* As the author unfortunately died in 1958 in a road accident, his teacher, Prof. G. Haas of the Hebrew University, kindly agreed to see this article through the press.

[3] See above, p. 80.

[4] Listed are only mammalian species. The sample included, besides remains of snakes and frogs, five carapax pieces and two limb bones of a turtle *(Testudo graeca)* as well as a humerus of a large bird, which could not be identified.

Rodentia

Hystrix.—An outstanding feature of the composition of the Geulah fauna is the abundance of porcupine remains. These include several complete mandibles, palatal parts, many isolated incisors and cheek teeth and a considerable number of limb bones, all of which proved to be strikingly larger than the corresponding parts of the indigenous porcupine of today—Hystrix indica indica Kerr (syn. H. hirustirostris).

Two mandibles of the Geulah sample (G:21 and G:22) retained complete molar rows, which had a length of 37.2[5] and 38.3 as compared with a dental length of 31.8 to 32.4, measured on mandibles of four recent specimens.[6] The complete upper dental row of a palate fragment from Geulah (G:29) had a length of 38.5 in comparison with 31.5 and 31.7 in the recent porcupine (H. U. 9881/1 and H. U. 9881/8).

When limb bones are compared, size differences are still more striking. The following table, a comparison of ulnae, metacarpi and astragali, demonstrates clearly how far the Geulah porcupine deviates in all its measurements from the values of the indigenous recent animal.

However, not only did the Geulah porcupine exceed our common porcupine significantly in all dimensions: the two animals also differ osteologically in

HYSTRIX—LIMB-BONE COMPARISONS

	fourth metacarpus				ulna		astragalus	
	Geulah		Hebr. Univ.		Geulah	Hebr. Univ.	Geulah	Hebr. Univ.
	G:11	G:16	9881/8	9881/1	G:20	9881/1	G:19	9881/8
Maximal length	33.4	33.5	26.5	28.2	121.8	108.5	25.9	18
Proximal width	9	10.9	7.3	7.8			20.7	17
Least width of diaphyse	7.4	7.6	5	5.4	10.3	7.7		
Distal width	8.9	9.8	6.9	7				
A. P. diam., proximal	10.6	12.1	9,5	9.7				
A. P. of diaphyse, least	4.9	5.1	3.3	3.8	7.5	6.5		
A. P. diam., distal	7.4	7.5	5.1	5.7				
Olecranon process, length					29.8	25.2		
Olecr. proc., prox. width					17.2	11.8		
Olecr. proc., diameter					17.3	12.3		
Lateral trochlea, length							16	10.5
Lateral trochlea, A. P. diam.							14.6	9.8

[5] All measurements are given in mm.

[6] H. U. 9881/1 and H. U. 9881/8 at the Hebrew University, Dept. of Zoology, and MZM 165 and MZM 204 in the author's collection.

several respects, and in all probability we are dealing here with a new species. The same type of Hystrix was already recognized years ago by Prof. Haas, who found mandibles and teeth among the faunal remains from Kabara Cave. A comprehensive study of this type is now rendered feasible by the new rich material from the Geulah Caves.

Rodentia.—Small rodents are scarcely represented in the sample. This scarcity probably reflects nothing but the crude method of collection, since no sifting has been done in the Geulah Caves so far.

The identified parts of rodents, apart from Hystrix, include a mandible of *Spalax* and three limb bones of *Gerbillinae.* A solitary incisor indicates the presence of a hare—*Lepus* sp.

Insectivora

Erinaceus sp.—The hedgehog is represented by the posterior part of a right mandible with M_1 and M_2 and a fragmentary left mandible. The fragments are larger than the respective mandible parts of the indigenous European hedgehog, and come close to the dimensions given by Bate for Erinaceus carmelitus (Bate, 1937, pp. 167-168).

Artiodactyla

As usual, remains of ungulates make up the bulk of the material. They consist mainly of bones of gazelles and fallow deer in about equal quantities.

Gazella.—The sample includes some rather well-preserved horn cores, which are of prime importance for any specific attribution. An almost complete core with a part of the frontal bone (G:77) bears clearly visible tool marks. The same piece, with an outer length of 140, a circumference at the base of 92.5, A.-P. diameter of 33.4 and traverse diam. of 24.1 fits very closely a horn core assigned by Bate to *Gazella decora* (Bate, 1940, p. 419), especially with the presence of deep furrows at the anterior and posterior border of the core, in the direction and transverse section of the horn, and in the general position and shape of the surpraorbital foramen. The dimensions of the core—A.-P. diam. of 32, transverse diam. of 25.5 (Bate, 1940, p. 423)—also agree very well. To the same species doubtless belong the horn core of a juvenile (G:81) and an additional core fragment of an adult gazelle (G:82).

According to Bate, this gazelle is a comparatively recent immigrant into Palestine, since no specimens have been recorded so far from levels earlier than

Mesolithic. The occurrence of *Gazella decora* among the fauna of the Geulah Caves is accordingly of great interest.

Another core with a fragment of the frontal bone (G:78) is considerably stouter and corresponds fairly well to a horn taken to represent *Gazella arista* (Bate, 1940, pp. 429 ff.). It exhibits the same elliptic transversal section, has about the same A.-P. diameter, and also the texture of the core is essentially the same. In particular agreement are the deeply sunk supra-orbital pits.—This piece has a circumference of 97, an A.-P. diam. of 34.2 and a transversal diam. of 25.2. The base of a fifth core (G:79), still stouter, with a circumference of 99 and an A.-P. diam. of 35.4 may well belong to the same type.

At all events, we have to consider here two species of gazelles at least, a fact stressed by size variations among other skeletal parts. There are, for instance, two right rami of mandibles, the height of one being 12.7 (at the level of the mental foramen) while the corresponding height of the second amounts only to 10.8. The limb bones of gazelles in the collection include: two distal parts of humeri, a calcaneus, two astragali, the distal part of metacarpus, two first phalanges (one without distal epiphyse, belonging to a young animal), and two second phalanges.

Dama mesopotamica.—The fallow deer is represented by two proximal fragments of shed antlers, a part of a left maxilla with P^{2-4} and M^1, another left maxillar fragment with P^{2-4}, a mandible piece with M_{1-2}, and eight isolated teeth. Limb bones include the distal parts of two tibiae, the proximal end of a radius, an astragalus of a maximal length of 41, and a third phalanx.

Cervus sp.—Some limb bones of considerably larger size than the corresponding parts of *Dama* belong to a big cervid, possibly *Cervus elaphus,* recorded from Levalloiso-Mousterian up to Aurignacian levels in the Wadi el-Mughara Caves (Bate, 1937, pp. 209-210) and from the lower Palaeolithic of Umm Qatafa (Vaufrey, 1951, p. 201). The distal part of a humerus (G:71) has about the same dimensions as the same bone from Umm Qatafa (distal width of 58 compared to 57 and 63 as given by Vaufrey), while a first phalanx is somewhat more slender than Umm Qatafa specimens.

Capreolus capreolus.—Two phalanges, a first and a second one (G:85, G:86) significantly smaller than those of *Dama,* yet different from those of Gazella, probably belong to the roe deer.

Bos primigenius.—A first phalanx with a maximal length of 71.8 and a least width of 32 bears witness to a large bovid. The detached distal epiphyse of a

metapod points likewise to a still young but already big wild ox. Two isolated teeth, an upper M^1 and a lower molar, also belong to *Bos*.

Sus scrofa.—There are only a few remains of the wild boar, but they give evidence of two quite distinct animals, at least as far as size is concerned. A very large incisor (G:51) belongs to a big specimen, while a fourth metatarsus (completely adult) with a total length of only 67.2 and a least diaphysal width of 10.4 points to a very small and stout animal. The remains, which also include part of a tusk, are, however, too scarce for any specific conclusion to be reached.

Carnivora

Crocuta sp.—Of special interest is a palatal fragment with P^{1-3} (G:56). The hypsodont index of P^3 ($\frac{\text{crown height} \times 100}{\text{crown length}}$) is regarded as diagnostic in distinguishing the indigenous striped hyena from the now tropical spotted hyena. The average value for the former is 86.8, for the latter 107.4 (cf. Kurten, 1956). The P^3 in the present specimen is partly damaged, but permits height and length measurements of the crown. The computed index then amounts to 97 without taking into account the marked wear of the tooth, which reduces the crown height (and therewith the index) considerably. The piece—which also proved to be larger than corresponding parts in available specimens of the indigenous striped hyena—consequently ought to be assigned to *Crocuta*.

Additional parts of this species are a large upper canine tooth with a maximal length of 72.5 on its outer curvature and a maximal circumference of 61, a fragmentary P_3, a large P_1 and a second phalanx.

Alopex sp.—A part of a mandible with P_3, P_4, and M_1, and three isolated canines belong to a fox, which is larger than our indigenous *Vulpes vulpes*, and exceeds in its tooth dimensions also the fossil *Vulpes vinetorum*, recorded from the Wadi el-Mughara Caves (Bate, 1937, pp. 179 ff.). It may be assigned tentatively to the genus *Alopex*, known from Pleistocene Europe and recognized among the bone material from Kabara Cave (Upper Palaeolithic) by Prof. Haas.

Vormela peregusna.—The sample contains a complete calvarium of this small musteline. Most of the teeth are lacking: only the right upper carnassial and both the first molars are retained. Though the dentition appears somewhat stronger, this specimen seems very much like the skull of the recent animal.

Meles meles.—Only a single fragment of a cranial roof belongs certainly to the badger. There is another cranial fragment, which also belongs to a large

musteline, but it has not yet been identified. A similarly unidentified distal part of a humerus also points to a large musteline.

From the material described above it is hard to draw any clear-cut conclusion as to the character of the faunal assemblage, which remains essentially obscure. To some extent, indeed, the material has the appearance of a man-compiled refuse deposit. Some fragments show the typical signs of shattering for food purposes, and a few parts bear obvious scars of flint tools on their surfaces (cf. the horn core G:77). However, the damage to many of the bones—in fact to most of the bones if only ancient, sinter-covered breakage surfaces are considered—does not point to any human activity.

The relatively high percentage of carnivore remains in the sample and especially the strange porcupine concentration are additional facts which render it difficult, if not impossible, to regard the Geulah fauna as a true kitchen-midden. It may well be that the faunal remains here reflect several alternating types of activity—of man as well as of beasts.

To sum up, it must be stressed again that the cave material studied so far is the result of random collecting, confined essentially to the surface level, and to an area of one to two square metres. The relative abundance of species within a sample picked up from so tiny an area is very astonishing and even more promising. A comprehensive excavation at the site, including a systematic sifting, is therefore desirable. For only then can we hope to gain an adequate understanding of the nature of the Geulah fauna.

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Excavations at Makmish, 1958*

Preliminary Report

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THE site of excavation is a small nameless mound situated in the barren sand dunes of the Plain of Sharon on the coast near Herzliyah. On the 1:20,000 map of the Mandatory Survey Department a large stretch of this land is named Makmish. Apparently on account of this name, a lofty artificial mound that rises from the sea-shore is generally known as Tell Makmish. The identity of this tell is unknown. Our small mound, which we refer to simply as Makmish, stands about 400 m. north-east of Tell Makmish, about 150 m. south of Wadi el-Gharbi, and about 600 m. south-east of the Accadia Hotel (map ref. 1314 1744).

The site of excavation is covered by dunes and grass bushes, and no ancient remains were visible at first. Our attention was drawn to this barren spot by accidental discoveries of clay and stone figurines. They made their first sparse appearance in trenches dug for military manoeuvres, after which the site became a happy hunting-ground for clandestine diggers. To investigate the site systematically became a matter of urgency. The necessary licence was granted to the excavators by the Department of Antiquities, and the excavation was carried out in October 1958 on behalf of the Museum Haaretz, Tel Aviv, with the cooperation of the Department of Archaeology of the Hebrew University, Jerusalem, and with funds contributed by Dr. K. H. Moosberg, Tel Aviv.[1]

The excavated area covers about 200 sq. m. of various depths. The main building remains were uncovered at the north-west corner of the mound. Close to the surface sand a layer of rubble embedded in hard clayey earth was exposed,

* Published in Hebrew in *BIES*, 23, 1959, pp. 48-52. The English version contains some additions.

[1] The present writer directed the excavation, ably assisted by Mr. A. Kindler, now Deputy Administrative Director of the Museum Haaretz, who initiated the dig, Mr. M. Broshi of the Hebrew University, and Miss Yael Shifman and Mr. D. Barag, students of archaeology. Mr. Y. Kolodni did the survey, and Mr. J. Schweig prepared the photographs published here, except the one shown in Pl. 12A, which was taken by Mr. A. Volk. Part of the labour was supplied by the Ministry of Labour. The writer wishes to thank all these for their helpfulness.

covering what later appeared to be the main part of a building. It was only after removing this layer that remains of masonry made their appearance.

The complete plan of the building could not be established, but in the main it consists of two rooms, a large one in the south, and a small chamber in the north. Its main axis is orientated north-south. The total length of the building was 15 m., and its suggested width about 6.5 m. No trace of the west wall has yet been found. Two phases of construction can be distinguished in this building. Of the first phase, remains of the east wall of the large room (9.5 m. in length) and the foundation course of the south-east corner were uncovered. This eastern wall is the best-preserved part of the building and the only one having a course or two of masonry preserved above floor level (Pl. 9A). It has an entrance door 1.1 m. wide with square posts built of ashlar. The rest of the wall is built of undressed stones. The upper part of the wall seems to have been built of bricks. Decomposed bricks were found over the whole of the built area. The east face of the wall was found to be plastered. On this side there was a spacious courtyard, whose limits we could not determine. The floor of this courtyard was 1 m. below the surface. In front of the door a patch of the floor was paved with thin slabs of sand-stone.

During the second phase of construction considerable alterations took place at the building. The large room extended about 2.5 m. further north, causing an oblique bend of the east wall. A small annexe was added on the north side at a somewhat lower level than the main hall. In the courtyard the floor level was raised by 0.17 m., and various installations were made. North of the entrance a round basin was sunk in the floor; it is 1.1 m. in diameter and preserved to a depth of 0.3 m. and is well plastered; at its bottom a small limestone incense altar was found. Near the south end of the building a round structure was built above floor level. It has an outer diameter of 1.5 m., an inner diameter of 0.7 m. and is plastered inside and outside. Its preserved height is 0.53 m.

A piece of a shallow, well-preserved open drain, 5.2 m. in length, runs from east to west. Its starting point and end are unknown; it may have been connected with the sunken basin in the courtyard. A find of architectural interest is a moulded round base of basalt lying near the drain, not *in situ*. It is nicely dressed and has a profile of a large, somewhat flattened torus with a terminating upper fillet, reminiscent of the torus base at the Persian palace of Lachish.[2] This base

[2] Cf. Olga Tufnell: *Lachish III*. London, 1953, p. 132, Fig. 11.

must have been brought from afar, as no basalt is to be found in this part of the country. Its purpose is still obscure, as no possible place for columns has so far been observed in this building.

The date of the building is established by the pottery and other objects within the limits of the Persian period (fifth to fourth centuries B.C.). Among the pottery types found, three are most characteristic of this period: the open shallow lamps, deep bowls with thickened rim, ribbed body, and high ring base, and the pointed jars, some with flat shoulder and low rim, others with huge 'basket' handles.[3] This dating is supported by some of the figurines found in the debris all over the building.

Many of these figurines were found in the northern annexe and outside the building on the northern slope. In the same chamber we found a set of beads of semi-precious stones (agate, jasper, chalcedony, quartz, cornelian, etc.), faience and bronze objects, small limestone incense altars, fragments of alabaster, etc. From the same loci, viz. the adjacent slope and the small room, came all the figurines and incense altars found prior to the excavation. This indicates that the annexe probably served as a treasury for valuable objects which later found their way into a dumping place on the nearby slope, apparently in the course of a clearing operation which followed the destruction of the building. This destruction seems to have occurred somewhere at the end of the Persian period.

The last phase of occupation of the site took place in the Hellenistic period. The building was not rebuilt, but its ruins were turned into an open-air platform composed of fallen building materials. A thick layer of decomposed bricks with a top layer of rubble mixed with fragments of plaster was spread over an area covering most of the previous building, except for the northern annexe which was filled with sand. The eastern border of this platform coincides with the outer face of the previous entrance wall. The layer of brick material and rubble stones here reaches a thickness of 0.5 m. and its vertical face was plastered in line with the plastered wall.

The courtyard was filled with blown sand. Near the sunken basin, which was by now covered, a small rectangular structure 0.4×1 m. was built. Only the lowest course of it remained. It was plastered on all four sides, being in level with the main platform. It served presumably as an altar. The date of construction of

[3] Cf. R. W. Hamilton: Excavations at Tell Abu Hawam, *QDAP*, 4, 1934, p. 4, Figs. 3-5; C. N. Johns: Excavations at 'Atlit (1930-31), *QDAP*, 2, 1932, Fig. 4.

the platform is suggested by Hellenistic pottery and figurines found associated with it. Among the pottery types are especially represented various bowls of the third and second centuries. B.C.[4] This dating is supported by a number of coins discovered in the top layer. Mr. Kindler dates them to the third and second centuries B.C.

Trial pits sunk below foundation level of the Persian building revealed a continuous layer of brown earth and a layer of sand containing sherds of the Iron Age. A trial trench near the western slope cut across a brick wall running in the east-west direction. The pottery related to these early remains has a characteristic dark red slip with applied hand burnish or occasional wheel burnish; it consists of rims of cooking pots and other forms common during the tenth to the early eighth centuries B.C.[5] The narrow limits of these trial digs did not enable us to establish the character of this early occupation.

The main find, however, which gives the site its specific interest is the large number of clay and limestone figurines which were discovered both before and during the excavations. Generally speaking, they belong to the class of votive figurines current in the eastern Mediterranean during the Persian and Hellenistic periods. But our group is distinguished by a great variety of forms and styles and consists of types hitherto unknown or very rare in Palestine. The great majority of figurines are hollow terracottas, 18 cm. in height, made in moulds. The most peculiar and popular types of this class represent seated men of patriarchal appearance fondling their long beards (Pl. 10 A, B), and women in an advanced stage of pregnancy (Pl. 11 A, B), presumably charms to ease childbirth. Both seem to originate from Phoenicia. Some of the bearded men have a cylindrical tiara (Pl. 10 B) and recall some Persian prototype, others wear a high pointed Osiris head dress (Pls. 9 B, 10 A). Other common types, in keeping with Canaanite tradition, represent women nursing a child (Pl. 11 C) and women supporting their breasts with their hands, resembling the well-known Astarte figurines. Some represent young maidens (Pl. 10 C) or lads. A number of fragmentary figurines show distinct Greek influence in their drappings and head dress.

Another class of terracottas is made of solid clay and is hand-moulded. A small head of this type bears a typical Persian head dress. The most attractive

[4] Cf. J. W. Crowfoot, G. M. Crowfoot, Kathleen M. Kenyon: *The Objects from Samaria.* London, 1957, Figs. 49; 55; 57:1.

[5] W. F. Albright: The Excavations of Tell Beit Mirsim, I, *AASOR,* 12, 1932, Pl. 27:20, 23.

statuette, 27 cm. in height, represents a naked male figure holding in his left hand a small bowl containing a disklike object (Pl. 12 A). The muscular body seems to indicate a representation of Herakles. A head of another solid male figurine probably belonged to a similar, but still larger body. It has a marked chin and a peculiar crenellation on top (Pl. 11 D). We are not yet able to point out exact parallels to this type of figurines, but it seems to show Cypriot influence.

Of definite Cypriot origin are some limestone statuettes with a plank-shaped body. A common attitude of these figurines is to hold the chiton in one hand and a votive offering in the other (Pl. 12 B). No complete statuette of this kind has been found. A female head wears a heavy crown, and a male head is crowned with myrtle and shows the archaic smile characteristic of Cypriot sculpture (Pl. 9 C). These votive figurines are very common in Cyprus and belong to the sub-archaic Cypro-Greek style of the fifth century B.C.[6]

Purely Egyptian in style is a partly broken statuette of polished black stone representing Isis holding the child Horus on her knees. On the back of the statuette is incised a hieroglyphic inscription which apparently contains the name of the votary. Other fragments of Egyptian figurines are made in limestone. The whole ensemble of figurines at Makmish testifies to a variety of origins and influences: Phoenician, Persian, Egyptian, and Greek. Of great chronological value are a few fragments of the 'pregnant woman' type which were found in a stratigraphical context at Tell Abu Hawam, level II, dating from the Persian period.[7] An excellent specimen of this type of figurine has lately been uncovered at Achzib on the Phoenician coast, north of Nahariyah, in a tomb which is attributed to the fourth century B.C.[8] At Beth Shean several fragmentary figurines of the 'bearded man' and 'pregnant woman' types were found in unstratified context.[9] Tell eṣ-Ṣafi[10] has yielded a number of fragments of the Cypriot plank-shaped statuettes, as well as fragments of terracottas. One small fragment showing the feet of a similar limestone statuette comes from Tell el-Jemmeh.[11] By far the largest group of well-preserved terracottas of the Makmish type was found in a

[6] E. Gjerstad *et al.*: *The Swedish Cyprus Expedition*, III. Stockholm, 1937, Pls. XXX:1-2, CXXXIII:1-5.

[7] Hamilton, *op. cit.* (above, n. 3), Figs. 10, 25, 26.

[8] Cf. *IEJ*, 9, 1959, p. 271.

[9] G. M. FitzGerald: *Beth Shan Excavations, 1921-23: The Arab and Byzantine Levels*. Philadelphia, 1931, Pl. XXIV:2-3.

[10] F. J. Bliss & R. A. S. Macalister: *Excavations in Palestine*. London, 1902, p. 140, Fig. 53, Pl. 70:10s.

[11] W. M. F. Petrie: *Gerar*. London, 1928, Pl. XV:8.

sanctuary excavated near Sidon in Phoenicia, where they are dated approximately to the fourth century B.C.[12] Most probably Phoenicia is their place of origin.

Another kind of votives found at Makmish are the small limestone incense altars about 8 cm. square. One of them has incised decorations showing geometric patterns and crude animal figures resembling the altar from Gezer.[13] Similar altars were found at Lachish, Tell el-Jemmeh, and Tell el-Far'a, where they are attributed to the Persian period. One of our altars is noteworthy for its Maltese crosses and lattice pattern in red paint. Two others, found prior to the excavation, are most peculiar, having as supporters a sculptured lion (Pl. 10D) and a monkey (*?*) respectively.

The rich find of votive figurines, incense altars and other objects, as well as the type of building and its installations, suggest that this building served as a place of worship, a sanctuary. The type of figurine indicates that the sanctuary was dedicated to the cult of fertility.—Who served the cult on this isolated site? There seem to have been no dwellings near the sanctuary, and the nearest settlement associated with it was most probably Tell Makmish on the sea-shore. This tell was occupied continuously from the Early Bronze Age to the Hellenistic period. The Persian period is well represented by many potsherds and other objects of this period, which were collected upon the surface of the tell. The site was then apparently occupied by a Phoenician colony, one of those mercantile colonies that the seafaring Phoenician traders established along the coast of Palestine to ensure their flourishing sea-trade. This Phoenician expansion is well attested in the writings of Herodotus and Pseudo-Scylax, and is vividly reflected in the famous epitaph engraved on the coffin of the Sidonian King Eshmun'azar (fourth century B.C.) found at Sidon, wherein *inter alia* the deceased recounts his achievements in these words: 'Furthermore, the Lord of the kings gave us Dor and Yafe (Joppa) the mighty lands of *Dgn* which are in the Plain of Sharon, in accordance with the important deeds which I did. And we added them to the borders of the country so that they would belong to the Sidonians for ever.'[14] Tell Makmish is in fact situated in the Plain of Sharon, within the borders of the Persian province of Dor, and a short distance from Joppa.

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[12] M. H. Chéhab: Les Terres cuites de Kharayeb, *Bulletin du Musée de Beyrouth*, 11, 1953-1954, Pls. II, VII, VIII. [13] R. A. S. Macalister: *The Excavation of Gezer*, II. London, 1912, Fig. 525.
[14] G. A. Cooke: *A Text-book of North-Semitic Inscriptions*. Oxford, 1903, No. 5; J. P. Pritchard, ed.: *Ancient Near Eastern Texts*. Princeton, 1955, p. 505.

The Phoenicians, who settled at Tell Makmish, established their sanctuary on the small hillock near the rivulet. The reason why they chose this remote spot with no apparent topographical advantages may have been a local tradition that the site was an ancient place of worship. This is tentatively suggested by the earlier remains found beneath the sanctuary, but it has still to be proved by future excavations. The Phoenicians at Makmish practised the most popular cult of their homeland—the fertility cult. In ritual ceremonies they dedicated to their deity votive figurines, jewellery and the like. The heterogeneous character of these votive figurines is typical of the seafaring Phoenicians, who were mediators between various cultures and developed their own hybrid style of art. The most typical of these figurines are, of course, Phoenician and Cypriot. The latter indicate close relations with the island. The limestone statuettes are imported, but the terracottas showing Cypriot influence are Makmish-made by people who were familiar with Cypriot styles and forms. It should be remembered that Phoenicians had their colonies in Cyprus too.

Few of the figurines at Makmish are works of art. They are mass-produced conventional votive objects, lacking the individuality that belongs to art. Nevertheless, some of them are quite original and of a good standard, and as a whole they form an invaluable contribution to our meagre collection of works of plastic art from Palestine of the Persian period. Equally, they contribute to our knowledge of the cult and history of the coastal region of Palestine from a time which has left little internal evidence.

To sum up, the excavated site was first occupied during the tenth to the early eighth centuries B.C., after which it was deserted for a long time. During the Persian period (fifth to fourth centuries B.C.) the site was re-occupied by Phoenician settlers of neighbouring Tell Makmish, who built a sanctuary where votive figurines were dedicated to the deity. After the building had fallen into ruin, the site was used as an open-air cult place during the Hellenistic period, and in the second century B.C. it was finally deserted.

The Ancient Desert Agriculture of the Negev

V. An Israelite Agricultural Settlement at Ramat Matred*

Y. AHARONI, M. EVENARI, L. SHANAN and N. H. TADMOR

THE ARCHAEOLOGICAL FINDS

In all three houses we found signs of fire, which were particularly noticeable in room 1 of house A, and in rooms 2-3 of house C. In these three rooms especially, we found a considerable quantity of fragments of pottery scattered over the floor. The richest haul of finds came from house C (see Pl. 5 B).

In all these houses we found two types of pottery:

(1) Wheel-made pottery, belonging to the usual well-known Judean and Israelite types from Israelite period II (c. 1000-840 B. C.).[8]

(2) Coarse, primitive, hand-made ware, such as is known for this period only from the Negev and the 'Aravah.

(1) All the pottery of the first type can be assigned roughly to the middle of the tenth century B. C. (Fig. 11, 1-10, 12, 14; Pl. 14 C-F, 15 A) and parallels to all of them can be found in Hazor X, which dates to the reign of Solomon. The most striking are the two cooking pots, one with a handle (Fig. 11:12, Pl. 14 F) and the other without (Fig. 11:14, Pl. 14 E). Both belong to the transitional type characteristic of the second half of the tenth century and continuing to the first half of the ninth, as found in Megiddo V-IV[9] and in Hazor X-IX.[10] The rims of the store jars also have counterparts in Megiddo V[11] and in Hazor X.[12] A small sherd shows traces of irregular handburnish (Pl. 14 D, right). The

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* Concluded from *IEJ*, 10, 1960, pp. 23-36; Pls. 5B-6.

[8] The authors use here the new scheme of subdividing the Iron Age into Israelite periods I-III, cf. *IEJ*, 8, 1958, pp. 171-184.

[9] R. S. Lamon & G. M. Shipton: *Megiddo*, I. Chicago, 1939, Pl. 40:19-20.

[10] Y. Yadin, Y. Aharoni, Ruth Amiran, Trude Dothan, I. Dunayevsky, J. Perrot: *Hazor*, I. Jerusalem, 1958, Pl. XLV:19, 22 (strata X-IX); idem: *Hazor*, II. Jerusalem, 1959, Pl. LI:11-13 (stratum X).

[11] *Megiddo*, I, Pl. 21:122-124.

[12] *Hazor*, I, Pl. XLVI:7-9, *Hazor*, II, Pl. LII:22.

same picture is presented by the material collected during the survey at site 158 (Fig. 13; Pl. 16A) and at the other Israelite sites in the region (Pl. 15B). Specially noteworthy in this connection is the carinated bowl (Fig. 13:5) of the ancient type which continued to be produced down to the tenth century, as at Megiddo V[13] and Hazor XII-X.

(2) We found a considerable quantity of the coarse ware peculiar to the Negev, and by excavation we unearthed fragments of eight vessels which it has been possible to restore in their entirety (Fig. 12; Pl. 13), as well as other fragments, mainly in houses C and A (Fig. 11:11, 13; Pl. 14A, B). All the vessels of this type are similar in shape: they are open pots with flat bases and hole-mouth rims. They vary in depth from approximately 10 to 20 cm., with corresponding variations in diameter. The sides of the vessels sometimes slope slightly inwards and sometimes slightly outwards. Some of them have four knob-handles attached close to the rim.

All of them are hand-made. The clay is coarse, containing straw and a large amount of organic matter of various kinds, the impressions of which have been preserved.[14] From these it will be possible to obtain information about

[13] *Megiddo*, I, Pls. 30:114-115, 31:150.

[14] Our thanks are due to Prof. M. Stekelis of the Hebrew University, Jerusalem, who drew our attention to the impressions of wheat and its organic remains in the clay.

Fig. 11. Pottery from site 108, Israelite period II.

No.	*Reg. No.**	*Object*	*Description*	*See Plate*
1	108/C/29	Store jar	Light-brown clay, grey core, white grit, yellow slip ..	15A
2	108/B/2	Store jar	Light-brown clay, grey core, grey grit, grey-yellow slip	14C, left
3	108/C/28	Store jar	Light-brown clay, grey core, grey grit	
4	108/C/32	Jug	Brown clay, white and black grit, red slip	14C, right
5	108/C/37	Jug	Grey slip, black core, dark grit	
6	108/A/18	Store jar	Grey-brown clay, yellow core, white grit	
7	108/C/60	Store jar	Grey-brown clay, well fired	
8	108/C/59	Store jar	Red clay, grey core, white grit, well fired	
9	108/A/3	Juglet	Brown clay, grey-brown core, white and brown grit .	
10	108/A/10	Jug	Brown clay, grey core, grey and white grit	
11	108/C/3	Hand-made bowl	Light-brown clay, grey core, large grey and brown grit	
12	108/C/15	Cooking pot	Brown clay, black core, white grit	14F
13	108/B/1	Hand-made bowl	Brown clay, grey core, white grit	
14	108/C/5	Cooking pot	Red-brown clay, grey core, white grit	14E

* The number includes that of the site, building, and object.

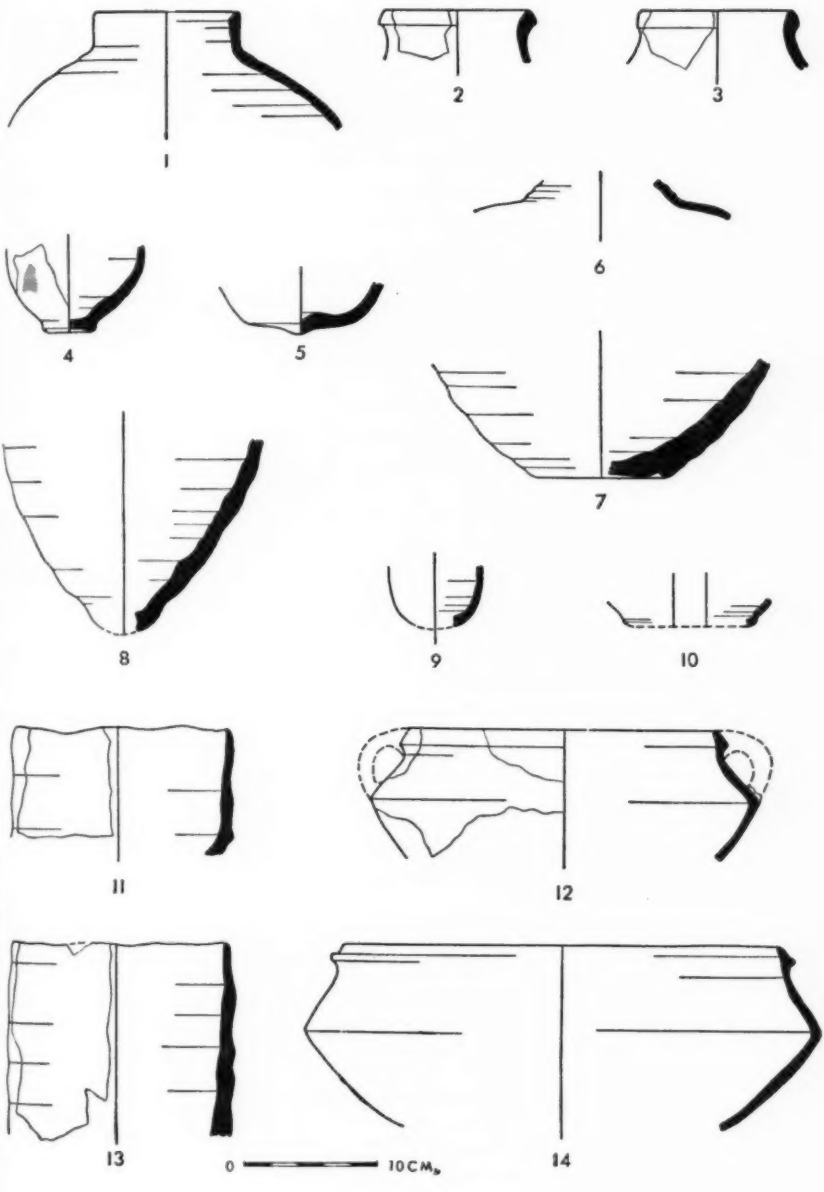


Fig. 11.

some of the crops grown in the region, and this material will be published separately, after it has been properly examined. On many of the bases there are mat impressions, showing that the vessels were made on a mat (Pls. 13 E, 14 B).

Since pottery of this type has been found on the Iron Age sites in the Negev, we had previously concluded that it belonged to this period.[15] In the trial excavation at farm F in the upper Niṣṣanah Valley, we found a similar vessel with a spout, together with material from Israelite period III.[16] Other vessels of the same kind, found by Prof. N. Glueck at Ezion-geber (Tell el-Kheleifeh) were conjectured by him to have been used as crucibles for smelting copper.[17] In the settlement under discussion here, where there were no copper workings, all the signs indicate that they were employed mainly as cooking pots. In the area excavated, as already remarked, we found fragments of only two cooking pots of the type in general use in this period, as against fragments of tens of pots of the primitive type. This latter pottery was no doubt made locally by the most primitive methods, i.e. on a mat and with very bad firing. It may be conjectured that these vessels were the work of nomad potters, who, being constantly on the move from settlement to settlement in the Negev and 'Aravah, could not make use of the more highly developed instruments of their craft, such as the potter's wheel and a permanent clay oven. These simple and cheap utensils largely satisfied the daily needs of the local population, especially as

[15] *Op. cit.* (above, n. 1), p. 241.
[16] *Ibid.*, p. 243, Pl. 50 A-B.
[17] Cf. *BASOR*, 71, 1938, p. 14; *ibid.*, 79, 1940, pp. 17-18; *Encyclopaedia Biblica*, I. Jerusalem, 1950, p. 269 (Hebrew).

Fig. 12. Hand-made bowls from site 108, Israelite period II.

No.	*Reg. No.*	*Description**	*See Plate*
1	108/C/4	Light-brown clay near rim, black near base ...	13E
2	108/A/26	Dark-brown clay near rim, black near base ...	13F
3	108/A/55	Dark-brown clay near rim, black near base ...	13D
4	108/C/3a	Dark and light-brown clay	13C
5	108/C/9	Yellow to grey, clay black core	
6	108/C/2	Light-brown clay near rim, dark-brown near base	13B
7	108/C/3	Yellow to grey clay	13A
8	108/C/2	Light-brown clay, black core	14A

* The texture of all the vessels contains large red and black grit, traces of organic matter, and the bases show traces of mat impressions.

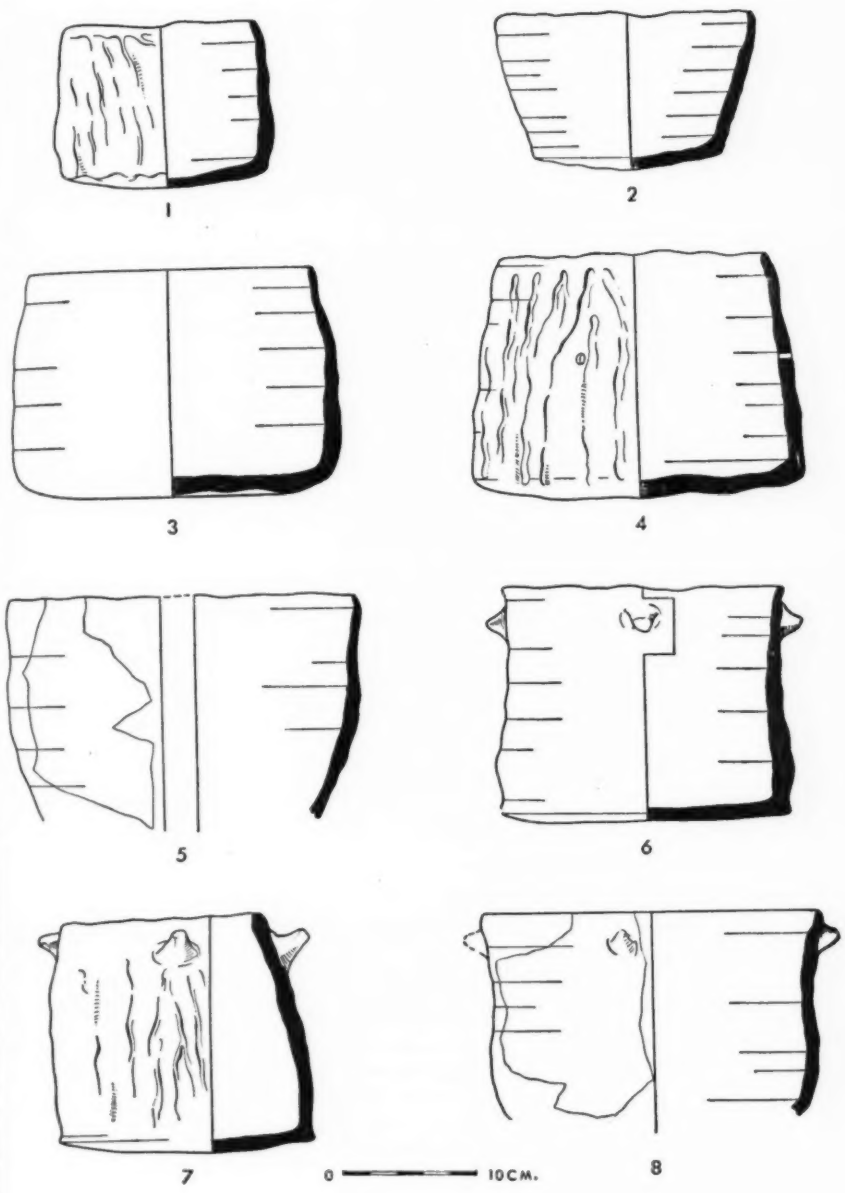


Fig. 12.

cooking pots. At the same time, a certain amount of the usual pottery of the period was imported from further north.

Below is a numerical table of the fragments of the two kinds of sherds found in those houses which were excavated:

House	Fine Ware	Coarse Ware
A	50	53
B	89	70
C	121	158

As these figures do not include the whole vessels, the proportion of primitive ware is slightly higher than appears from the tabulated data.

Since all the fine ware in the settlement under discussion belongs to the tenth century, or at the very latest to the beginning of the ninth century, it is clear that the coarse pottery found together with it must also be assigned to this period, always bearing in mind that the manufacture of such primitive ware was probably of greater chronological range. The material from Ezion-geber has not yet been published, and only a stratigraphic excavation of one of the southern tells can provide us with more exact dates for the range of this pottery.

In addition to the pottery, we found a few stone mortars and pestles, particularly in house C (Pl. 15 C-F).

Fig. 13. Pottery from site 158, Israelite period II.

No.	*Reg. No.*	*Object*	*Description*
1	158/11	Juglet	Brown clay, black core, white grit, red slip
2	158/33	Bowl	Brown clay, white and black grit, black slip
3	158/37	Jug	Brown clay, black core, black grit
4	158/2	Store jar	Light-brown clay, grey core, white, black and red grit, red slip
5	158/157	Bowl	Brown clay, black core, large white grit
6	158/4	Bowl	Red-brown clay, grey core, white grit
7	158/31	Jug	Grey-brown clay, brown core, light slip
8	158/35	Store jar	Brown clay, dark-brown core, grey grit, yellowish slip
9	158/25	Jug	Red-brown clay, grey core
10	158/104	Store jar	Light-brown clay, grey core, large white and grey grit
11	158/97	Bowl	Light-brown clay, yellowish core, large black grit
12	158/125	Jug	Brown clay, grey core, white and grey grit, brown slip
13	158/146	Jug	Brown clay, black core, white and black grit, dark slip
14	158/136	Jug	Brown clay, grey core, large white grit
15	158/106	Bowl	Brown clay, grey core, large grey grit
16	158/101	Hand-made bowl	Light-brown clay, black core, large white and brown grit
17	158/21	Hand-made bowl	Brown clay, grey core, large white, black and red grit

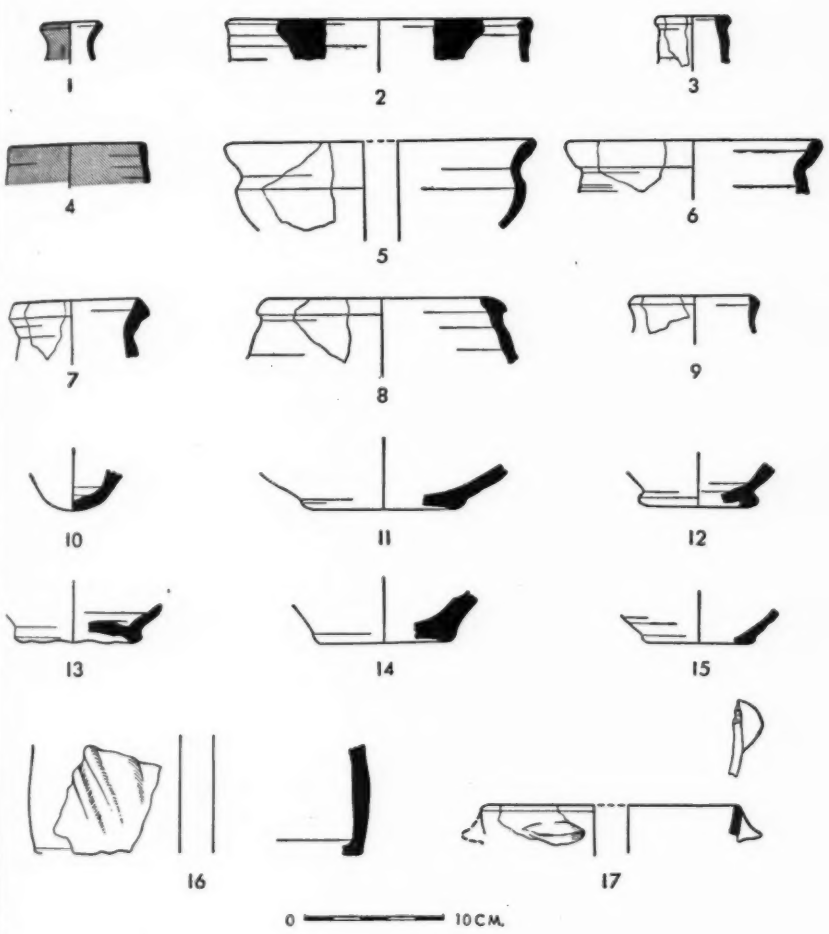


Fig. 13.

THE ROAD FORTS

To obtain a better understanding of the location of the Israelite settlement, we included in our survey the Israelite forts; these were discovered in the area, but not actually on Ramat Maṭred itself, where, as already stated, not a single fort was found.

The important highway that runs close to Ramat Maṭred is, as mentioned

above, the road from 'Avdat to Beer Ḥafir. This road runs through Naḥal 'Avdat (Wadi Ramliye-'Abde), crosses the watershed south of Ramat Maṭred, and makes its way down to Beer Ḥafir and the Niṣṣanah Valley, first along Naḥal La'anah (Wadi Qathûn) and finally by a short-cut to the south of it. This road is undoubtedly the most convenient and shortest route from the direction of Kadesh Barnea and Beer Ḥafir to 'Avdat and the north, and even today it can easily be travelled in a vehicle.

On this road we found four forts from the Israelite period, all of them built at key-points for the control of the road (see Fig. 14): (a) a fort at the entrance to the wadi opposite 'Avdat (122); (b) a fort near the big cisterns of Naḥal 'Avdat (Wadi Ramliye), about 4 km. south-west of the first fort (142); (c) a fort above Naḥal La'anah about 3 km. east of Beer Ḥafir (146); (d) a fort above Beer Ḥafir (144). We took the measurements of three out of the four.

(a) The fort opposite 'Avdat (122); map ref. 1257 0217 (Fig. 15; Pl. 6 B).

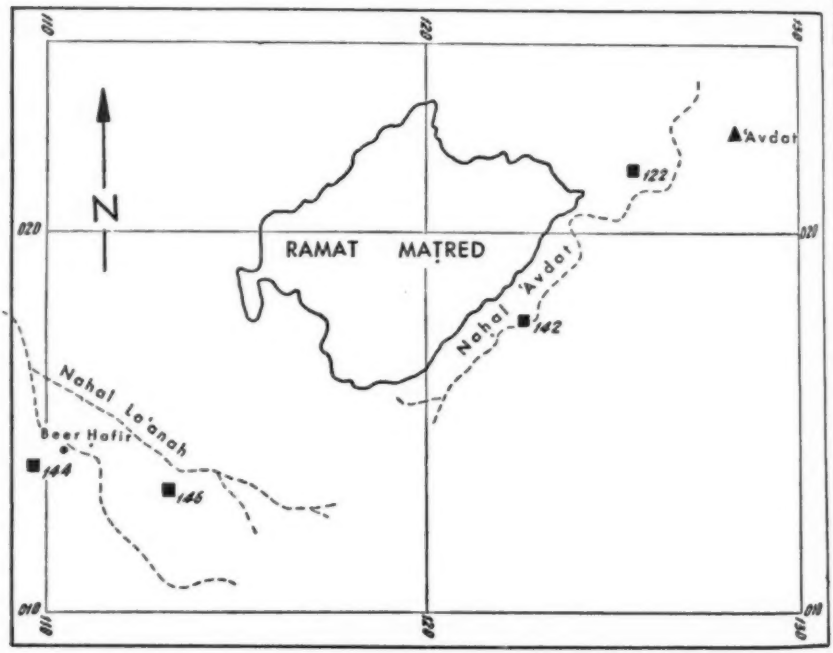


Fig. 14. Sketch map showing location of road forts.

This fort, which is conspicuously situated on the top of the ridge to the west of the wadi, was first noticed by E. Anati. Its plan is unusual. The fort consists of a small building with five rooms arranged around a central court (1). To the east of the fort there is a spacious courtyard, surrounded by a strong wall which extends to the edge of the cliff (2). What one sees from below is actually the sturdily built eastern wall of this courtyard (see Pl. 6 B). A gateway, protected by a small tower, opens northwards into a larger court (3), on both sides of which there is a weaker wall than the defence works of the fortress itself. These walls are connected with three casemate rooms situated in the north-western angle of the square (4) which, like the fort, are strongly built of large stones. Evidently, then, the main fortification consisted of the small building with its court (1,2), to which was attached a khan for travellers or garrison reinforcements, with a spacious courtyard (3) and living-rooms (4). All the collected pottery belongs to the Iron Age (Pl. 16 B).

(b) The fortress of Naḥal 'Avdat (142); map ref. 1230 0181.

This fortress stands near the large cisterns in Naḥal 'Avdat, about 4 km. south-west of the previously described fort. The large cisterns, which are still

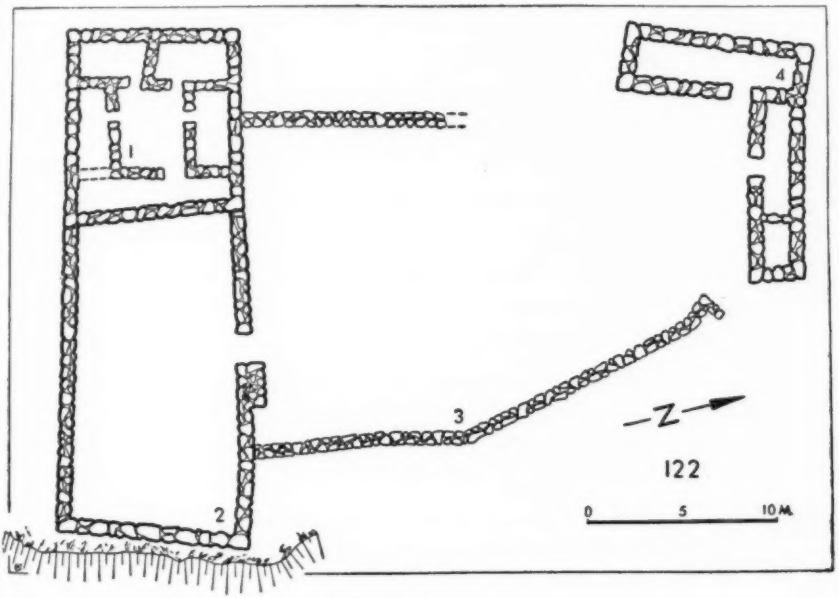


Fig. 15. Fort No. 122.

used today, are cut out of the rock on the eastern side of the wadi. However, there are other ancient cisterns on the opposite, western side, and it was near these that we found material from the Iron Age as well.

The fort is built on a flat-topped mound in the wadi, opposite the cisterns. The extant building is undoubtedly from the Nabatean and Byzantine periods, as attested by the many sherds collected (Pl. 16E). But on the slope below the fort, we also found sherds from the Iron Age (Pl. 16D), showing that this hill was already built on in the Israelite period. While it is impossible without excavation to establish what kind of structure stood here then, the probability is that, in the Israelite as in the later Nabatean period, the site was occupied by a fort for the protection of the road.

The importance of this site in the Roman period is also proved by additional buildings (143) which we found on top of the hill to the east of the wadi, into the slopes of which the large cisterns are cut (map. ref. 1233 0175). At this point, there are rows of dozens of well preserved rooms, built side by side on a straight plan and separated from each other by straight streets. The site thus gives the impression of being an organized camp and not a normal settlement. Its location on the top of the hill is no doubt a further indication of its strategical military purpose.

(c) Fort 146; map ref. 1132 0133 (Fig. 16; Pl. 6C).

This is the most interesting and strongest of the forts on the line of the road. The site was discovered by Glueck (site 218 in his enumeration), but he gives only a very brief description.[18] The fort is built on a conspicuous knoll above the descent of the road from Naḥal La'anah to Beer Ḥafir, about 3 km. east of the latter. The sheer sides of the rock rise to a height of 3-4 m. above the ground level. The fort occupies all the surface area of the knoll, being elliptical in shape like the knoll itself. It is 23 m. long, with a maximum width of 12 m. Its walls, which have a thickness of one stone, are well preserved, and the outlines of the adjacent casement rooms can easily be traced amidst the piles of debris. In its general outlay this fort most closely resembles that discovered above 'Ain Qedeis,[19] only it is smaller and the knoll here is more precipitous.

[18] N. Glueck: The Fourth Season of Exploration in the Negeb, *BASOR*, 142, 1956, pp. 21-22, 27. Glueck also gives a good photograph (Fig. 3) with the heading 'Iron Age II and later Site 218'. We do not believe that the fortress was in use after the Iron Age, in spite of some Byzantine sherds found there, which can be found on almost every Israelite site in the Negev.

[19] Cf. Y. Aharoni, *apud* B. Rothenberg: *Discoveries in Sinai*. Tel Aviv, 1958, p. 107, Fig. 4 (Hebrew); idem: Recent Discoveries in the Sinai Peninsula, *Antiquity and Survival*, 2, 1957, p. 296, Figs. 2, 3.

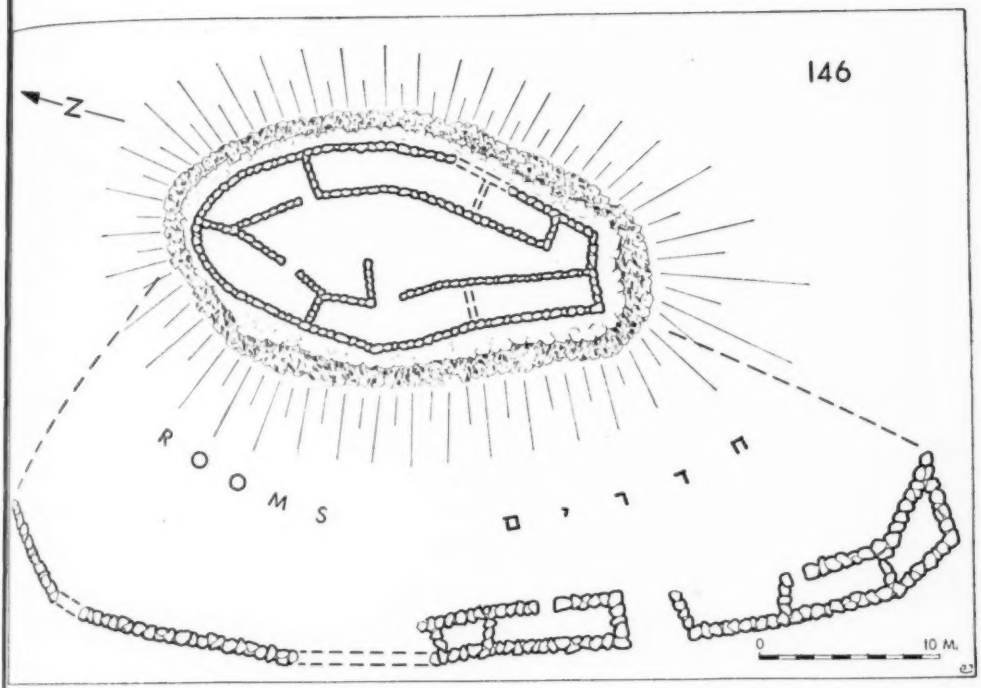


Fig. 16. Fort No. 146.

The gateway may have been on the western side, where there is a wide opening in the inner wall. However, the outer wall is here in too ruined a state for such a conjecture to be verifiable.

In the area at the foot of the fort, on its western side, there are further remains of rooms. The debris here is too thick for the plan of the rooms to be drawn without excavation, but the whole space is enclosed by a second casemate wall built of large stones, a portion of which has been well preserved. Since such a built-up and protected area is found on only one side of the fort, it cannot be regarded as an outwork, but apparently served mainly as a khan for travellers, similar to that attached to fort 122. At the same time, it is probable that the entrance to the fort itself was by way of the structures at its foot.

On the site, we collected many sherds from the Iron Age (Pl. 16C) and only a few from the Byzantine period.

(d) The fort of Beer Ḥafir (144); map ref. 1096 0139 (Fig. 17, Pl. 6A).

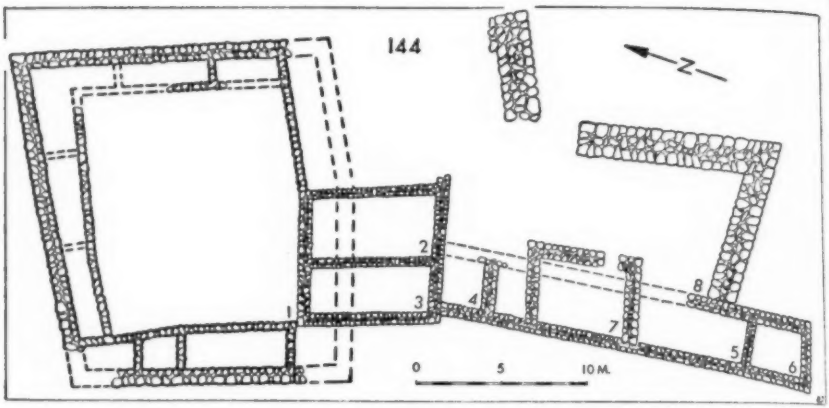


Fig. 17. Fort No. 144.

This fort was discovered by Glueck who first described it as a Nabatean site,[20] but subsequently revised his opinion and declared that it was established in the Iron Age.[21] The fort is built on a prominent knoll, about 1 km. south-west of Beer Ḥafir. Like Glueck, we also found material from the Iron Age, as well as Nabatean and Byzantine sherds.

It is not difficult to discern the principal structures of each of the two periods, even without excavation. The ancient Israelite fort occupies the northern end of the knoll (1), overlooking the wadi and the road. It belongs to the usual type of square fort, enclosed by casemate walls, the whole measuring about 20 by 20 m. The eastern, northern, and western sides of the casemate walls are still clearly visible, but of the southern side only part of the inner wall has been preserved. This side may have been deliberately pulled down and changed when the new extensions were added to the fort.

In the Nabatean or Byzantine period, the fort was given a tower (2,3) and an additional long building of casemate rooms (4, 5, 6,). These walls are constructed of smaller stones than the earlier walls, but are built in straighter lines. In the north-eastern corner of room 2, it can be clearly seen how the foundations of the later wall were superimposed on the more ancient one. This whole newer structure is essentially an enlargement of the old fortress, the main parts of which continued in use in the later period.

[20] N. Glueck: The Third Season of Exploration in the Negeb, *BASOR*, 138, 1955, p. 21.
[21] *Op. cit.* (above, n. 18), p. 21.

A further alteration to the fort was made by the construction of room 7 which was built along the top of rooms 4-5, apparently in the Byzantine period. Without excavation, it is hard to determine to what period the thick walls enclosing the courtyard (8) on the south and east belong.

From these particulars it is clear that there was already a fort standing here in the Israelite period, and that this fort continued in existence down to the Nabatean and Byzantine periods when it was extended. The Israelite fort is similar to others of the same type discovered at various places in the Negev, such as the forts at Mishor ha-Ruaḥ,[22] in Naḥal Raviv,[23] and above Kadesh Barnea.[24]

This continuous network of forts from the Israelite period is a sure sign that here ran one of the main highways from Judah, through 'Avdat and Beer Ḥafir, and onwards in the direction of Kadesh Barnea. This is the most direct and convenient route from the region of Tell el-Meshâsh, Tell el-Milḥ (Hormah?) and Khirbet 'Ar'ara (Aroer), via Beer Yeruḥam (Bir Raḥma) and 'Avdat, to Kadesh Barnea. While there is no archaeological evidence for the existence of this road in the time of the Israelites' wandering in the wilderness, i.e. at the end of the Bronze Age (no remains at all from this period have as yet been found in the southern Negev), it is nevertheless quite probable that, even at this earlier date, the Israelites followed the very same convenient route which was subsequently fortified and developed in the time of the kingdom, and that this is the biblical 'way of *atharim*' (Num. xxi, 1).

SUMMARY AND CONCLUSIONS

An Israelite settlement was established at Ramat Maṭred about the middle of the tenth century, in all probability in the reign of Solomon. This settlement was concentrated in the eastern portion of the plateau, near the cultivable fields and in the proximity of the main wadi, which descends into Naḥal 'Avdat close to the fort of Naḥal 'Avdat (142). The distance from the settlement to the fort is 3-4 km. The establishment of the settlement was thus certainly connected with the setting up of the forts and the development of the important road which guaranteed the security of the whole district. But, for all that, the settlement itself was essentially agricultural and lived by the products of

[22] Evenari, Aharoni, Shanan, Tadmor, *op. cit.* (above, n. 1), p. 239, Fig. 5.
[23] J. Feldmann, *Mibbifnim*, 21, 1958, pp. 102-104 (Hebrew).
[24] Rothenberg, *op. cit.* (above, n. 19), p. 140, Fig. 9. This fortress was discovered by Dr. M. Dothan.

the fields in its immediate vicinity and by pasturing animals, as indicated by the many large corrals.

The settlement as such was unfortified, its houses being dispersed over a distance of 1.5 km., with two larger agglomerations (108, 158). In this respect it resembles the Israelite settlement discovered at Mishor ha-Ruaḥ,[25] and both belong to the typical Negev villages (חצרים) 'which have no wall round about them' (Lev. xxv, 31).

The Israelite settlement at Ramat Maṭred continued in existence for only a short time, as is shown by the uniformity of the pottery found in the excavations and during the survey. Moreover, we did not come across any signs of repairs or later structural additions to the houses excavated. The traces of fire found in most of the rooms, and the pottery scattered about the floors, indicate that the houses were hurriedly abandoned and destroyed by fire. This destruction was presumably not confined to this one locality, but must have been connected with some military action that resulted in the razing of the road forts as well. Possibly it should be associated with the campaign of Pharaoh Shishak in c. 920 B.C. when, according to his list, among the places sacked by him there were many settlements in the Negev.[26] If we take the latest possible date for the destruction, the middle of the ninth century B.C., it may be assigned to the period of the Edomite revolt against Judah and the consequent loss of the 'Aravah by the latter in the reign of Joram the son of Jehoshaphat, c. 850 B.C. (2 Kings viii, 20-22; 2 Chron. xxi, 8-10).

The Israelite settlement at Ramat Maṭred was never rebuilt after its brief heyday. However, no inference should be drawn from this about the network of road forts which must have been restored when the kings of Judah re-asserted their control over these regions. It is also clear that, at least during the ninth and eighth centuries B.C., there were other agricultural settlements in existence in other parts of this region, like Mishor ha-Ruaḥ. We are not yet able to explain why the Israelite settlement on Ramat Maṭred was not restored, together with these others, when the region once more came under undisputed Judean control.

Postscript. After this paper had gone to press, we received Prof. Nelson Glueck's last report on his aerial reconnaissance of the Negev (*BASOR*, 155, 1959, pp. 2-13). The hand-made bowls from Tell el-Kheleifeh (Fig. 5) seem indeed to

[25] *Op. cit.* (above, n. 1), pp. 239-241.

[26] This possibility was suggested by Prof. B. Mazar on a visit to the place during the excavations.

be of the same type as our 'local ware', which Prof. Glueck saw on his visit in Israel last summer.

It is sometimes really difficult to place this coarse material, which is uncommon in the Iron Age in other parts of Palestine. However, we cannot agree with Prof. Glueck's judgment on our published material in two points:

(a) Only one sherd from site 38 (*IEJ*, 8, 1958, Pl. 52 B) belongs to the Iron Age (cf. already *IEJ*, 9, 1959, p. 143, n. 2). This is the only sherd from a small site on the middle of the K-line. In our opinion, the other sherds published in Pl. 52 definitely belong to the Middle Bronze Age I. The material of this period is much thinner and better fired than the locally made Iron Age pottery, but it still has its typical composition in the Negev. This can well be seen by comparing the pottery of Pl. 52 with its large white grits (including Pl. 52 C, which Prof. Glueck too regards as MBI) with the locally made Iron Age pottery published in the other plates and in the present paper.

(b) We did not base our dating of the line on the small number of sherds, and most of the material published in Pl. 52 (C-F) has no connection at all with the line. We based our dating of the line on the fact that it is connected on both sides with a great number of MBI stone circles or cairns. These structures are well known all over the Negev and are always connected with MBI sites nearby. Pottery near these cairns is always very rare. We continue therefore to believe that our dating of the line to the Middle Bronze Age I is well founded.

The purpose of this line is another question. Having since discovered more such lines, it seems to us that Prof. Glueck is right in his opinion that these lines did not simply serve for defence. On the other hand, we are glad that Prof. Glueck has abandoned his grave-theory, which from the beginning seemed to us impossible for a straight line about 5 km. in length. We are continuing our study of these lines and of the various aspects of the MBI culture in the Negev and hope to publish our conclusions in the near future.

Y. A.

Corrigendum. In the fourth article of this series (M. Evenari, L. Shanan & N. H. Tadmor: Chain Well Systems in the Wadi Arava, *Ktavim*, 9, 1959, pp. 223-240), a regrettable error occurred. On pp. 228 and 238 it was mentioned that sherds of the Persian period were discovered on the sites concerned in the Arava, but in fact only material from the Nabatean, Roman and Byzantine periods has so far been found there.

VARIA

Easterly Storms—November 1958

Y. LEVY—TOKATLY
Israel Meteorological Service

TWICE during the month of November 1958 stormy easterly winds swept over Israel. The first time was on the night of 1-2 November in the north of Israel, when the wind was sufficiently strong to cause damage to light structures and trees; the second storm followed about three weeks later, on the 21st and 22nd, but exceeded the previous one in both severity and duration as well as the extent of the area affected. It burst out as a severe and widespread sandstorm accompanied by low temperatures—in places at times below freezing—and extremely low humidities (see Tables I and II, pp. 116, 117).

The first easterly storm was of a type and nature that could be reasonably expected especially in the transition season; the later storm was an exceptional occurrence, very singular in its formation and character. The first was of a type that accompanies the development of a vortex at the north tip of the Sudan trough, which is an easterly wave; the second developed as a result of a totally different pressure distribution and circulation to be described in the present article.

Normally at the time of year under discussion, the mean sea-level pressure distribution changes from the summer phase to the phase prevailing in winter. The track of the migratory depressions across Europe gradually shifts to lower latitudes and the Mediterranean. During the winter this water basin is both a favourite path for the travelling depressions and an effective source of energy for them.

Often, during the transition month of November, an Azores anticyclone may extend a ridge well into the higher latitudes so that a deep meridional trough forms east of this wedge of high pressure. Because of this deep trough, an influx of cold air is injected into the eastern part of the Mediterranean, where a rainy spell develops. The result of such a situation was described by D. H. K. Amiran and M. Gilead.[1]

[1] Early Excessive Rainfall and Soil Erosion in Israel, *IEJ*, 4, 1954, pp. 286-295.

We shall now point out another aspect of an atmospheric High at another controlling position and focus some light on a different anticyclonic phase which makes the anticyclonic cell rather a rain-preventor for the eastern Mediterranean.

Steadily, about the middle of November 1958, a surface wedge of high pressure spread over most of Europe until it established itself there as a separate cold and almost stagnant atmospheric High (Figs. 1a,b).

Cold air seeped over Europe from the north, but the weather under that anticyclonic circulation was clear and stable except for widespread and prolonged fog. Depressions that arrived from the Atlantic were steered by the High north-eastward and there could be no advection of suitable air-masses to bring about the necessary interaction of air masses at fronts and depressions at southerly latitudes. In these conditions there was no retreat southward of the sub-tropical anticyclonic cells and their intertwined easterly troughs from over the eastern Mediterranean; conditions of *sharav* or near *sharav* prevailed over Israel. A weak circulation was associated with the sub-tropical ridge and relatively high temperatures were maintained in the area (cf. Table I). The pressure patterns over Europe and the Mediterranean changed little from day to day, save for a gradual slow creeping eastwards of the centre of the High over Europe (Figs. 1b,c). On the 17 November an interesting stage developed which, though it was just a continuation and a development of the blocking High-phase, was a turning point for the weather in the eastern Mediterranean and a stepping-stone to a significant rapid development there. The anticyclone over Europe, the ridge from north-east over the Levant and the extension from the Siberian anticyclone grew into one another and merged into an extensive broad belt of surface high pressure (Figs. 2a,b) that held back any invasion of cyclones from high latitudes and prevented any protrusion southward into the Mediterranean of active westerly troughs.

East cold flow thus developed on the south fringes of this high pressure belt, which was further developing and spreading south. Temperature and pressure gradients thus became sharper, and the easterly flow increased and spread south on the 18th and 19th. Surface easterly winds with upper north-easterlies up to considerable altitudes above sea-level covered most of the eastern Mediterranean, transporting to the south and west deep cold air with exceedingly low moisture content. The approaching cold air was noticeable in the gradually falling temperatures from 18 November, but the extreme change

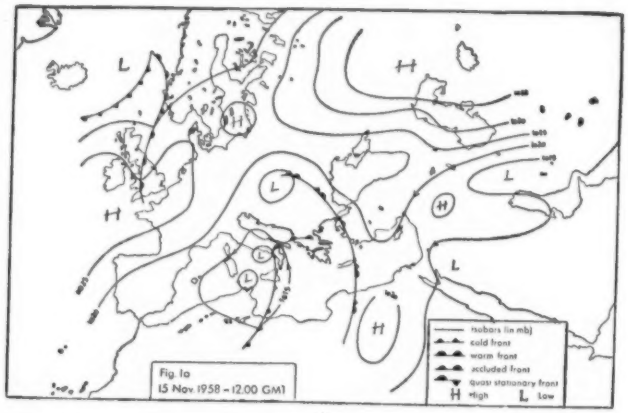


Fig. 1a
15 Nov. 1958 – 12.00 GMT

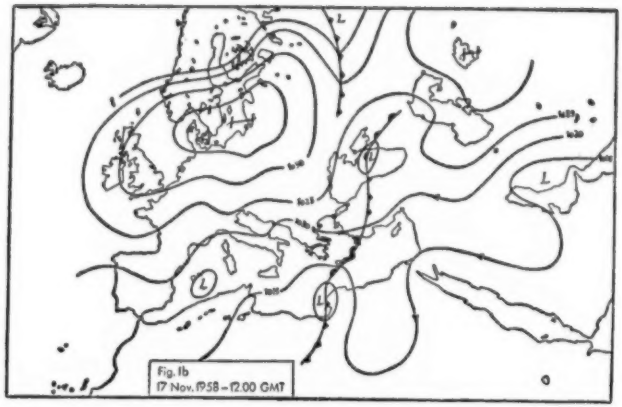


Fig. 1b
17 Nov. 1958 – 12.00 GMT

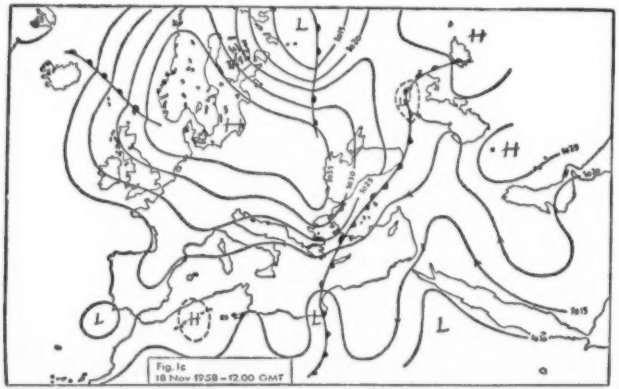


Fig. 1c
18 Nov. 1958 – 12.00 GMT

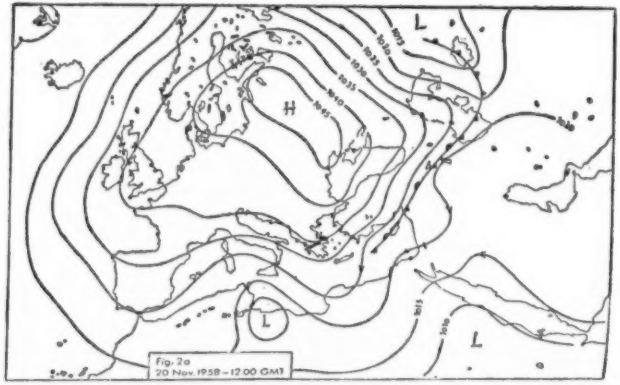


Fig. 2a
20 Nov. 1958 – 12.00 GMT

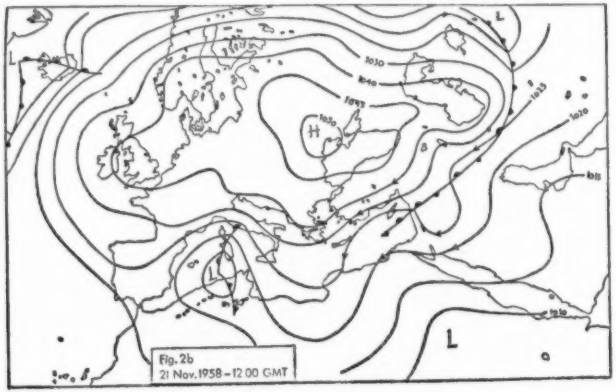


Fig. 2b
21 Nov. 1958 – 12.00 GMT

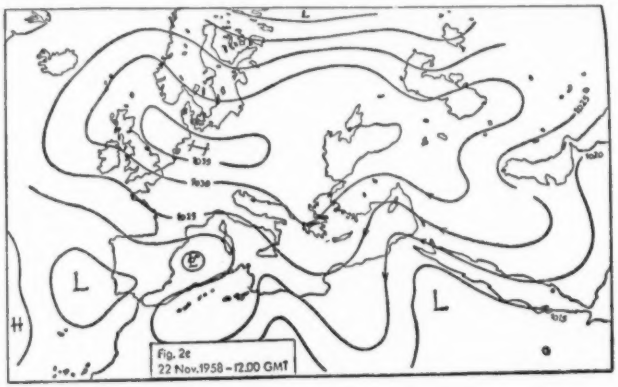


Fig. 2c
22 Nov. 1958 – 12.00 GMT

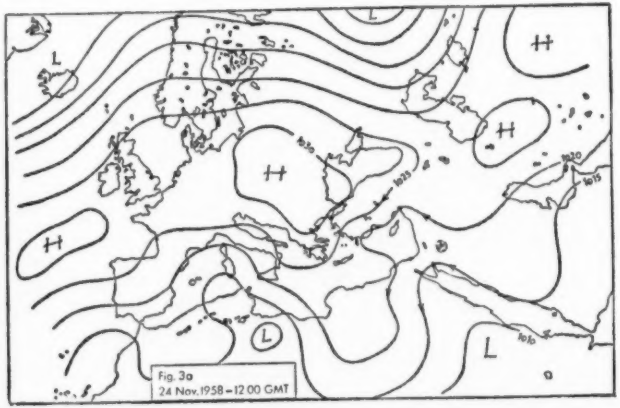


Fig. 3a
24 Nov. 1958 – 12.00 GMT

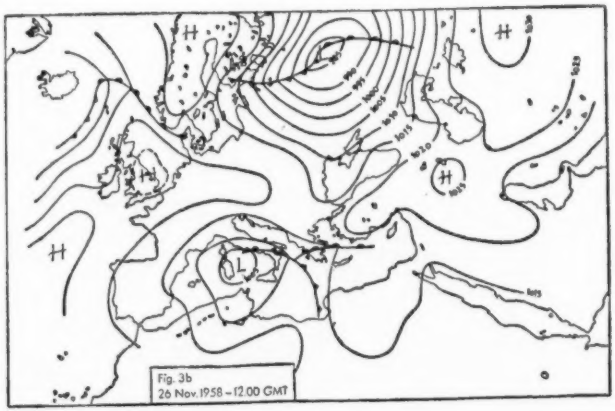


Fig. 3b
26 Nov. 1958 – 12.00 GMT

Table I

DRY BULB TEMPERATURE AND RELATIVE HUMIDITY (RH) AT 12.00 GMT

Date	Mt. Cana'an		Beit Jeimal		Lod (Evaporation Station)		Acre		Beersheba	
Nov. 1958	t°C	RH	t°C	RH	t°C	RH	t°C	RH	t°C	RH
17	21.7	31	29.2	21	29.6	21	24.6	67	28.0	18
18	21.8	30	27.4	33	27.7	34	24.0	53	27.8	13
19	20.2	43	25.4	44	25.3	52	23.8	75	25.2	29
20	18.2	25	23.6	15	25.9	25	23.0	75	24.4	20
21	12.7	40	20.0	19	23.8	11	22.2	23	21.8	15
22	11.0	13	15.1	9	17.0	12	20.0	28	17.0	3
23	11.3	19	19.9	12	22.2	11	19.0	23	19.6	3
24	14.0	30	20.8	18	20.9	16	19.0	50	19.4	13
25	13.9	22	20.2	20	22.0	12	18.6	45	19.4	25
26	14.6	32	21.0	16	22.4	17	22.0	16	21.4	7
27	12.0	26	16.5	38	17.4	44	18.6	45	17.6	17
28	17.9	29	22.4	19	22.2	30	19.8	51	22.6	13

took place only on the 21st, when the boundary of the sharpest temperature gradient reached the Levant with a swift rush that blew with the intensity of a storm (Fig. 2b). The strong turbulent easterly currents past over desert and loose sand areas, and large amounts of sand and thick dust were carried by the storm to great distances and to considerable heights. The storm was strong enough to pick up and transport large quantities of sand particles of appreciable size; it lasted well over 24 hours. The described trend of the spreading anticyclone continued into the typical phase of Figs. 2c,3; but the zone of the tight thermal gradient and pressure distribution relaxed gradually after the 22nd, when the eastern Mediterranean was completely in the cold air (Figs. 3a,b).

Apart from the outstanding meteorological interest of such a synoptic development and situation, the storm made a deep impression on the public, both because of its unusual intensity, direction and duration, and because of the grievous harm done to agriculture. Three elements coincided in the storm: Firstly, the storm was exceptionally intense; secondly, the air was intensely cold and extremely dry; thirdly, the air was heavily laden with sand and dust. All these factors increased the climatic load and mechanical stress on plants, and many of them were killed as a result.

Table II[1]

SCREEN MINIMUM TEMPERATURE (1)
AND GROUND MINIMUM TEMPERATURE (2)

Date	Lod (Evaporation Station)		Kfar Blum		Beersheba	
Nov. 1958	1	2	1	2	1	2
17	9.5	5.5	7.8	5.5	10 4	7.5
18	9.7	5.0	8.0	5.5	13.5	12.0
19	9.0	5.0	8.1	5.8	9.0	7.2
20	8.7	4.8	11.4	8.0	9.5	7.0
21	10.0	3.7	5.4	2.8	13.5	12.0
22	12.8	11.0	12.3	8.0	9.6	9.0
23	11.6	11.4	7.6	1.1	9.8	9.3
24	3.0	-1.0	-1.1	-3.6	6.3	4.9
25	1.5	-3.1	-0.4	-3.2	3.3	1.9
26	2.4	-2.8	0.4	-2.7	5.6	4.5
27	6.2	0.7	11.8	8.7	6.2	5.5
28	6.3	1.7	6.5	4.0	7.0	6.1

[1] The writer is indebted to members of the staff of the Forecasting Centre and the Climatological Division who have helped with the compilation of the data given in Tables I and II.

NOTES AND NEWS

ARCHAEOLOGY: EXCAVATIONS

Jordan Valley ('Ubeidiya)

SOUNDINGS at a site in the Jordan Valley, near Tell 'Ubeidiya, revealed important remains of the Lower Pleistocene Age, the most ancient human remains ever discovered in the Near East, comparable in age only to finds in Algiers and Tanganyika.

The site was discovered by an alert member of Kibbutz Afiqim, while a bulldozer was levelling a piece of land belonging to the settlement. A four week expedition was organized in March 1960 by three Departments of the Hebrew University, headed by Prof. M. Stekelis of the Department of Archaeology, with Prof. L. Picard of the Department of Geology, and Prof. G. Haas of the Department of Zoology.

The finds prove that the site was inhabited by men in the Lower Pleistocene Age, half a million years ago. These finds include few human remains: two fragments of a human skull, four times as thick as the skull of modern man, and one incisor tooth. Fossil bones of some forty different species of animals, most of them now extinct, were found, including elephant, rhinoceros, hippopotamus, wild boar, turtle and, in very large quantities, a sort of catfish known as 'clarias'.

Other finds consisted of flint tools and chopping instruments belonging to what is known as the 'pebble culture'.

The discovery is one of the most important of the Lower Pleistocene Age yet to have been made from many points of view. It throws light on the climatic conditions that prevailed in the region and on the kind of human and animal life that existed there. It completely confirms the conclusion that these strata of the Lower Pleistocene belong to a period after the first rift movement, and that these strata were disturbed in the second rift movement.

(Communicated by M. Stekelis)

Oren Valley (Wadi Fallah)[1]

The fifth season of excavation at Nahal Oren in October-November 1959 under the direction of Prof. M. Stekelis with the assistance of Miss Tamar Yisraeli was a joint undertaking of the Haifa Municipality, the Hebrew University, and the Department of Antiquities.

In the pre-pottery Neolithic level several structures were unearthed, one of which, No. 16, was found complete with all its appurtenances. Two floors close to each other could be distinguished, as had already been observed in the earlier campaigns. This means that the inhabitants abandoned the site for some time, but came back later and resettled it. A round hearth made of pebbles was found in this house; inside it was white ash deposited by long use. Near the hearth was an irregularly shaped stone, with two cup-marks without any signs of use. In another part of the same house large flat stones were found in both levels. On the surface of one of them from the upper level, was a small depression; probably

[1] Cf. *IEJ*, 8, 1958, p. 131.

this stone was used as a rubber. In the lower level other large flat stones were found; on one of them lay two axes of unusual size (30 cm.) and the figurine of a woman cut from a pebble, the main parts of the body being indicated by deep or shallow lines.

The Natufian level was cleared in two layers. In the lower one, in which work was carried on from the previous season, a cemetery was found with over twenty skeletons, whose mode of burial was almost uniform. Most of the burials were single; in two cases, however, two bodies were found together in one grave: in one an adult with a child, the child's body lying partly beside and partly on that of the adult, in the second two adults buried with their heads turned towards each other. The burial pits were shallow and in most cases a stone bedding was placed under the skull; it was sometimes covered with stones, mostly small flat ones. In only one case could a burial pit be traced, oval in shape and about 20 cm. deep; in others it was only partly visible. Most of the buried were in a contracted position, with the hands stretched out below the body. Near most of the tombs was a mortar, placed about 40 cm. above the burial. In two cases the mortar had a hole at its end. The purpose of this mortar is not clear; it may have had some iritual meaning, as two smaller mortars were found inside the graves. However, it is not impossible that the mortar also served to mark the burial; this would explain why one burial was hardly ever found on top of another, although the graves were fairly densely placed.

With the burials were found various art objects, such as pendants, bone and stone animal heads, shells, etc. In the centre of the burial level was a big hearth, 1.5 m. in diameter, with large flat and polished stones forming its sides and white ash inside. Beside it were two smaller structures.

In the higher Natufian layer, whose clearance was only begun this season, walls of buildings and floors were uncovered; the floors are of beaten earth with ash fireplaces on them. The finds included basalt objects such as polishers, stone bowls, and numerous flint implements. Among the latter, one should note a kind of crude instrument made on a broad flake, of a kind unknown before. Of the coarse flints this was the dominant type, numbering over 100 examples. Many sickle blades with lustre on the cutting-edge were also found, a multiform microlithic industry, and many bone implements. Of special interest among the stone vessels are the flat bowls, as most of the vessels are deep.

(Communicated by M. Stekelis)

Tell 'Eli (Kh. esh-Sheikh 'Ali)[2]

The Department of Antiquities carried out a fourth season of excavations at Tell 'Eli in the fields of Kibbutz Alumoth in the spring of 1959. The expedition was headed by Mr. M. W. Prausnitz.

This season virgin soil was reached and found to consist of uniform clayey earth deposited on the -200 m. terrace just above today's river-bed of the Jordan. The earliest and lowest level (stratum IV) produced round pebble floors of huts, as well as rectangular rows of stone, alongside occupation floors. To

[2] Cf. *IEJ*, 7, 1957, pp. 263-264.

this level must be attributed a greater part of the ground basalt tools, long and beautifully fashioned flint saws, knives, winged and tanged arrowheads, as well as flint axes with transversal cutting edges. Remains of a similar culture were also recovered from the olive grove at the same altitude, i. e. -200 m. A preliminary survey was undertaken, and a large number of tools collected. The tools indicate a community deriving part of its subsistence from fishing and hunting in the adjacent Jordan River and Naḥal Yavneel (Wadi el-Fejjas). The buildings of the two upper strata, III and II, were entirely different from those of stratum IV. Few remains were found of the pre-ceramic stratum III, with the notable exception of one wall and one burial. Stratum II, which belongs to the earliest pottery-neolithic period, revealed a rectangular house, 13 m. long, with equally long and narrow rooms alongside both its longer walls, and a large inner courtyard between them. Among the building materials of this stratum II house were found discarded stone vessels, like rubbers and querns known from pre-pottery neolithic levels. The same stratum II produced pottery decorated by incision, combing, stabbing alternating with red or brown painted and burnished bands, as well as dark-faced burnished ware, well known from the northern sites in Syria and the Lebanon.

(Communicated by M. W. Prausnitz)

Beershéba: Bir es-Safadi[3]

Commencée le 15 novembre 1959, la 5e et dernière campagne de fouilles à Safadi—la 8e sur les sites de la région de Beershéba, les trois premières avaient eu lieu à Abou Matar—a pris fin le 15 janvier 1960. Safadi a été fouillé dans sa quasi-totalité, sur plus de 5000 m^2, ainsi que l'avait été Abou Matar.

La fouille à peu près complète de ces deux gisements et les recherches conduites dans les environs nous donnent une idée de la façon dont s'est opéré le premier établissement de sédentaires dans la région de Beershéba: sur les deux rives du wadi Shéba sur plusieurs kilomètres, en amont et en aval de la ville actuelle, ont été creusées dans les alluvions de la terrasse des maisons souterraines; sur toute cette distance les traces d'occupation se recontrent à peu près sans interruption mais avec, ici et là, à Abou Matar, à Safadi, à Kh. Bitar, à Bir el-Ibrahim, etc. des agglomérations.

A Safadi, le premier établissement comprend une douzaine d'habitations souterraines et une grande salle réservée sans doute à quelque usage communautaire. Les premières habitations, dont le type est à présent bien défini, sont de grandes salles subquadrangulaires où l'on descend à partir d'une petite cour circulaire creusée dans le sol de la colline. Le sol de la chambre comme celui de la cour est creusé de bassins, de silos et de foyers.

Ce type d'habitation est très mal adapté à la nature du terrain, et il est progressivement remplacé par des habitations que nous avons déjà décrites, à petites chambres ovoïdes reliées par des tunnels et où l'on accède par des puits. Les cours des maisons du premier type, ou la cuvette formée en surface par l'effondrement de la chambre, sont alors réutilisées

[3] Cf. *IEJ*, 9, 1959, pp. 141-142.

pour la construction de chambres souterraines de types très divers, rondes, ovales ou rectangulaires, construites en briques ou en pierres; leur toit, supporté par des poutres, est établi à la hauteur du sol environnant.

Un abandon de courte durée est observé au milieu de cette première période; un autre abandon, et qui paraît avoir été rapide et désordonné, en marque la fin. Après un certain temps — suffisant pour que toutes les dépressions se trouvent comblées — une nouvelle installation a lieu, en surface cette fois; une dizaine de maisons rectangulaires, construites en brique crûe sur fondations de pierres, orientées nord-sud avec entrée au milieu du petit côté, se groupent autour d'un grand bâtiment dont la fonction semble analogue à celle de la grande salle souterraine mentionnée plus haut.

La céramique de ce niveau de surface est au premier examen identique à celle de la période précédente. La durée totale de l'occupation a dû être brève, et ne pas excéder un ou deux siècles .La variété des types architecturaux et leur succession s'explique comme une série de tentatives d'adaptation de la maison au sol.

Parmi les objets présentant un particulier intérêt trouvés au cours de la dernière campagne figurent des outils en cuivre et une figurine en ivoire.

La figurine en ivoire mesure, sans la tête brisée, 11 cm. de haut; elle représente une femme nue, enceinte, les mains sur les hanches, dans la même attitude que celle des statuettes masculines précédemment découvertes. La technique est aussi celle de ces statuettes; les jambes ont été séparées à la scie, et les bras détachés du corps par une série de perforations dont les cloisons ont été ensuite abattues; on a indiqué aussi à coups de foret le système pileux de la région pubienne, le nombril, la pointe des seins et les fossettes lombaires. La perforation ombilicale est exagérée au point qu'il est permis de se demander si elle n'avait pas une fonction particulière. Bien que cette figurine ait, vue de face, la même attitude raide que les statuettes, on notera, de profil, une légère flexion des jambes sur le tronc; à l'inverse de ce que nous observons pour les statuettes masculines, la cuisse est longue et le mollet court; son modelé est délicat et les attaches bien dessinées; cette gracieuse figurine est sans doute l'une des meilleures pièces de la série des ivoires de Beershéba.

(Communiqué par J. Perrot)

Jaffa[4]

The third season of excavation in Jaffa, under the direction of Dr. J. Kaplan, was carried out from August to November 1958, on behalf of the Jaffa Museum, in cooperation with the Department of Antiquities.

The stratification established in the second season remained unchanged, with the exception of stratum VI, which, on new evidence, has been merged with stratum V. Stratum V now includes the remains of the citadel gate which were previously attributed to stratum VI.

It has become clear this season that the excavated areas cover the citadel of the city built in the Middle Bronze Age II. In this area the remains of thick walls of MBII were found on a slope rising from north to south. From the Late

[4] Cf. *IEJ*, 6, 1956, pp. 259-260.

Bronze Age onwards, various buildings were built between and above these walls. These buildings were partly destroyed in the Hellenistic and modern Arab periods, when the ground was levelled to such an extent that in a number of places the Hellenistic remains rest immediately on the Middle Bronze Age fortifications.

The key-point of the third season of excavations were the city gate and the walls belonging to strata IV and V. Trial soundings carried out here uncovered two ashlars inscribed with hieroglyphs, originally from the door jambs of the stratum V gate. The two stones were found re-used at the corners of the walls leading into the citadel from the stratum IV gate, apparently to protect the corners against beasts of burden and vehicles. The builders of stratum IV did not pay attention to the hieroglyphs: one stone is re-used with the inscribed face built into the wall, while the letters on the other stone were found upside down. The stones belong to exactly opposite places in the door jambs of the stratum V gate. One of them completes the inscription on a fragment found in 1956, giving the titles of Ramses II: 'Horus the mighty bull, beloved of the goddess Maat, King of Upper and Lower Egypt'.

In the southern part of area A, below the stone paving slabs, four building phases could be distinguished dating to the fourteenth and fifteenth centuries B. C., with the lowest phase resting on buildings of the MBII. Among the sherds found in these building phases were fragments of bichrome ware, Cypriot 'base-ring' I ware, and a number of complete vessels of Egyptian type.

In area B were found ruins of the Crusader and modern Arab periods, built on top of the remains of a glacis of the Middle Bronze Age II, made of alternating layers of kurkar and terre pisée.

In area C a group of vessels was found above the Middle Bronze Age II walls, which dates to the fifteenth century B.C. Above these the remains of Hellenistic wall foundations were uncovered. In addition, the remains of a tower dating to the first century A. D. were found.

In conclusion it should be noted that as a result of the definite dating of the stratum V gate (Ramses II), strata IV and V are now assumed to extend through the thirteenth century. The Ramses II gate was destroyed by fire probably at the end of his reign, when Egyptian rule in Palestine weakened, that is in the third quarter of the thirteenth century B. C. The stratum IV gate was probably destroyed during the reign of Ramses III, as a consequence of the invasion of the 'Sea Peoples' into the eastern basin of the Mediterranean.

(Communicated by J. Kaplan)

Tell Gath[5]

The fifth season at Tell Gath was carried out from 8 May to 15 July 1960, by the Department of Antiquities in cooperation with the Centro per le antichità e la storia dell'arte of the Istituto per l'Oriente, Rome; it was again directed by Mr. S. Yeivin, with Mr. S. Levy as Deputy Director; Miss Antonia Ciasca again participated on behalf of the Centro. Professor S. Moscati of Rome University, to whose initiative the cooperation of

[5] Cf. *IEJ*, 9, 1959, pp. 269-271.

the Istituto per l'Oriente is due, visited the excavations.

The expedition worked in three areas. In area A, an additional 'four-room house' was uncovered in stratum VI, dating to the seventh century B.C. For the first time during work on the site an undisturbed room belonging to the Persian period was uncovered (stratum III; fifth century B.C.). It contained a number of vessels characteristic of this period.

No building remains were found below the strata uncovered last season (VI-X), but an extensive lime-plaster pavement was unearthed, which slopes from north to south and from east to west. The nature of this enclosed paved area is not clear. With the kind help of Prof. R. Heimann of the Haifa Technion, an attempt was also made to re-examine the remains of the industrial installations uncovered last season. No final conclusions were reached, but there is some evidence that these installations were used for domestic food industries.

In area D the plan of the rounded building uncovered last year was traced further and partly clarified, and the excavations were extended to the east. Investigations were made into the building repairs and changes which this building underwent in the later strata (VI-IV; end of fourth and beginning of third millennium B.C.). Numerous vessels were again found which point to close associations with the protodynastic and early dynastic culture in Egypt at about 3000 B.C. In a pit a group of figurines was found which belong to the late Persian or early Hellenistic periods. In a tomb of the Byzantine period (fourth to fifth centuries A.D.) a pair of gold earrings was found next to one of the skulls.

A trial trench (area M) was opened this season at the north-west end of the high terrace surrounding the tell on three sides. Here were uncovered, towards the end of the season, the remains of the fortifications of the early city (about 3000 B.C.). The broad wall (its total width has not yet been established, but it is more than 5 m.) is built of well-bonded mud-bricks, with an earth glacis sloping down from it which is plastered with several layers of mud-plaster. On this glacis were built at regular intervals mud-brick projections, the foundations of which were stepped up on the slope of the glacis. Each of these is in its turn protected by a glacis built like that of the main wall.

(Communicated by the Department of Antiquities)

Tell Mor (Tell Kheidar)[6]

The second season of excavations at Tell Mor was carried out during March-April 1960, on behalf of the Department of Antiquities, under the direction of Dr. M. Dothan. Mr. I. Dunayevsky, architect at the Archaeological Department of the Hebrew University, prepared the plans. The excavations were again financed mainly by the Ashdod Development Corporation.

During the second season public buildings and fortifications were uncovered which show that the site served as a military and administrative centre,

[6] Cf. *IEJ*, 9, 1959, pp.271-272. In the 1960 season, we have numbered the Hellenistic as stratum I, so that all the stratum numbers in the 1959 report should be raised by one.

especially during the Late Bronze Age, serving probably as an inland port on Naḥal Lachish for the city-state of Ashdod.

The earliest remains found belong to the beginning of the sixteenth century B.C. (stratum XII). The floor of a courtyard belonging to a temple or high-place was uncovered. A shallow pit in this courtyard contained numerous broken pottery vessels of cultic character, which point to close relations between Tell Mor, Egypt, and Cyprus. During the sixteenth and fifteenth centuries B.C. the town flourished, as is evident from the remains of strata XI and X, and the finds indicate continued trade relations with Egypt, Cyprus, and the Phoenician coast.

The following stratum (IX) belongs to the fourteenth century B.C. To this period belongs a large brick building, measuring 21 × 11 m., whose wide walls remain standing to a height of 2 m. The building, which is divided into three large halls and twelve smaller rooms, contained numerous storage jars which indicate that it served as a central store. Only the owest floor was uncovered, but originally the building must have had a number of storeys.

After the destruction of this city at the end of the fourteenth century B.C., a new town was built on the site in the thirteenth century B.C. (strata VIII-VII). The main building of this town was a citadel, square in plan (23 × 23 m.). The outside of its mud-brick walls is built of alternating projections and recesses, and its internal arrangement resembles Egyptian buildings of that period. Here too, only the lower floor has been preserved, but the width of the walls (2.5 m.) and a stairway uncovered near the entrance to the citadel indicate that originally the building had several storeys. A deep layer of ashes bears witness to the total destruction of this city, dated by the sherds to the second half of the thirteenth century B.C.

On the ruins of the fortifications of stratum VII a smaller fort was erected (stratum VI; end of the thirteenth century B.C.) with 4 m. thick walls. The fort resembles the Canaanite forts called *migdol* by the Egyptians, and frequently represented on Egyptian reliefs depicting the conquest of Canaanite cities. Near the *migdol* were found remains of houses and of furnaces and clay pipes which served for smelting and casting copper. The city continued to exist also in stratum V (early twelfth century B.C.), and the pottery shows that its inhabitants were Canaanites who returned to rebuild the city after its previous destruction.

When the Philistines occupied this part of the sea coast in the first half of the twelfth century B.C., the town lost much of its importance. On the ruins of the fortified city rose a small unfortified village (strata IV, III). The settlement dwindled until it was conquered in the early tenth century B.C., perhaps during one of King David's campaigns against the Philistines, or during one of the Egyptian punitive raids in Canaan. The site then remained abandoned until about the eighth century B.C. The rebuilding may be due to King Uzziah of Judah (stratum II). This city was probably destroyed by Sargon of Assyria, who conquered Ashdod and Ashdod-Yam during his campaign of 712 B.C. The site was then abandoned and the port was transferred to the coast.

Tell Mor was resettled in the Hellenistic period (stratum I; fourth century B.C.) and developed into a manufacturing centre for purple dye, which was highly prized in antiquity. Already during the first season, part of a dyeing installation was uncovered, the first of its kind found in this country. During the present season, the dyeing installation was further explored, and a large public building cleared which must have served as an administrative centre in the Hellenistic period.

(Communicated by M. Dothan)

Megiddo

In January 1960, a three-day trial dig was carried out at Megiddo by Prof. Y. Yadin of the Hebrew University, assisted by Mr. I. Dunayevsky. The aim of the dig was to solve several problems remaining after the excavations conducted at Megiddo by the University of Chicago in 1925-1939.

A full report on the trial dig will be published in a forthcoming number of the *IEJ*.

Judean Desert

In January and March 1960, two explorations were carried out in the caves of the Judean Desert between Masada and 'Ein Gedi, on behalf of the Department of Antiquities, the Hebrew University, and the Israel Exploration Society, with the assistance of the Israel Defence Forces.

The first expedition to the Ṣeelim Valley (Wadi Seyal) lasted 10 days and was headed by Dr. Y. Aharoni. The expedition discovered traces of Chalcolithic occupation at some sites and in many caves, two Iron Age and four Roman fortresses in the region, and a group of caves inhabited during the Bar-Kokhba revolt. The most important finds were an arsenal of arrows, including the iron arrow-heads as well as the shafts made of wood and cane, coins from the time of Trajan until Severus Alexander, and some fragments of scrolls, including two parchments of a phylactery containing parts of Exod. xiii, 1-16, and fragments of Hebrew, Aramaic, and Greek papyri.

These discoveries stimulated a greater expedition, carried out for two weeks at the end of March and the beginning of April. The expedition was divided into four groups, each of which was assigned a specific area. Mr. J. Aviram organized and co-ordinated the work of these expeditions. Prof. N. Avigad headed the expedition to the south of the Ṣeelim Valley, later moving to the area of 'Ein Gedi; Dr. Y. Aharoni continued to the north of the Ṣeelim and in the Hardof Valleys; Mr. P. Bar-Adon explored the Mishmar Valley (Wadi Muḫras) and the 'Assael Valley, and Prof. Y. Yadin headed the northern expedition between the 'Arugoth and Ḥever Valleys (Wadi 'Areija and Wadi Ḥabra), concentrating mainly on the exploration of a big cave in the Ḥever Valley, discovered previously by Dr. Aharoni (cf. *IEJ*, 4, 1954, pp. 126-127). The most important finds were made in this last cave, including eighteen complete Roman bronze vessels, hidden in a basket, a fragment of Psalm xv, and a batch of papyri, bound together with a thread, discovered among other articles in a goatskin container. After having been opened, the papyri were read

by Yadin and found to contain fifteen letters from the leader of the Revolt, Bar-Kokhba, written in Hebrew, Aramaic, and Greek. Mr. Bar-Adon too found among other material some fragments of papyri with Hebrew and Greek letters.

A preliminary report on these expeditions will be published in a forthcoming number of the *IEJ*.

(Communicated by J. Aviram)

Beth-Shean

The excavation of the Roman theatre of Beth-Shean, the largest known surviving Roman building west of the Jordan, was begun in March under the auspices of the Government Committee for the Preservation of Landscape and Antiquities attached to the Prime Minister's Office, with the cooperation of the Government Department of Antiquities. The excavation was directed by Dr. S. Applebaum. The Department of Public Works acted as contractor, and work continued until the beginning of July.

The *cavea* was cleared of fill almost to orchestra level, and 15 rows of seats were found below the level of the *praecinctio*. Two Arab strata were located in the fill, the upper belonging to a comparatively late date, the lower to the early Arab period; over the north-west corner of the theatre was a building belonging to the seventh to tenth centuries. A stratum of similar date covered the west gate, whose excavation was commenced, the crowns of two arches connected with the gate complex being located. Five of the nine entrances *(vomitoria)* piercing the *cavea* were sectioned and found to have been occupied in the Arab period, when secondary walls were inserted into them. Traces of an iron industry were noted in the north-easterly of these. Preceding this period, Byzantine houses, some of whose mosaics were encountered, had been erected over the west gate area.

In the seating of the lower *cavea* a number of square sinkings were noted, perhaps for equipment connected with the awning spread over the theatre; a regularly spaced series of large square sinkings along the lowest tier may have been for the uprights of a balustrade. On the seating and on the retaining wall of the *praecinctio*, three Greek graffiti were detected. The front of the stage was also located, and by it the jamb of a fine decorated gateway. The top of the *scaenae frons* has begun to appear, having in its centre an ornamental entrance with horizontal voussoired lintel.

To the south of the theatre the ground level was lowered some 2 m., and the terrain here was found to have dropped to the theatre entrances by a terrace, at the foot of which a massive arcade surrounded the edifice. To the north of the arcade and abutting onto it was a small square structure on a high stepped podium, subsequently enlarged south to become an oblong; this seemed to have been a shrine, possibly sacred to the god Dionysus. Both this structure and the arcade were destroyed in the third century. Later, the building was rebuilt no less than three times, the third time in the later fourth century, when the ground was levelled up and the terrace abolished.

On present evidence, the theatre is thought to have been built in the late second or early third century A.D., but was not long in use. Its seats were

unworn, and the place was falling out of use in the second half of the same century; civil occupation covered its west gate in the fourth century, and in the fifth to sixth centuries the western section of the *cavea* was already ruinous.

Among the finds may be mentioned a fragmentary Greek inscription of the late third century A.D., recording a resolution of the *boulé* and *demos* in honour of a governor of the province.

(Communicated by S. Applebaum)

Caesarea

On 1 March 1960, a large-scale clearing of the fortifications of the medieval town was begun. The clearing is being done on behalf of the Government Committee for the Preservation of Landscape and Antiquities attached to the Prime Minister's Office and the Caesarea Development Corporation. The work is directed by Mr. A. Negev, assisted by Mr. G. Foerster; Prof. Y. Prawer of the Hebrew University, Jerusalem, is acting as adviser.

So far, the city walls, protected by a sloping scarp, 1200 m. long, and the moat were cleared. Two gates, on the east and north sides, were excavated. Minor trial digs were made in the layers antedating the medieval town, in the course of which walls of a large building, presumably Herodian, were discovered.

(Communicated by A. Negev)

VARIA

Israel Exploration Society—Meetings

A meeting of the Council of the Israel Exploration Society took place at the residence of the President of Israel in Jerusalem on 11 August 1959. The meeting was opened by President I. Ben-Zvi and Prof. B. Mazar, chairman of the Society. Prof. N. Glueck delivered a short lecture on his recent discoveries in the Negev. Mr. J. Aviram, Honorary Secretary of the Society, gave a report on its activities during the last year. Prof. Y. Yadin spoke on the plans for the building of the Israel Museum of Art and Archaeology, Dr. Y. Aharoni on the archaeological survey carried out during the last year, and Prof. M. Avi-Yonah on the proposed new Law of Antiquities. All the speakers stressed the importance of general planning of archaeological activities in Israel by means of an archaeological board, in which all interested bodies should be represented. A number of additional members were elected to the Council.

Members of the Israel Exploration Society met for the annual meeting at Beth Hillel in Jerusalem on 17 March 1960. Prof. N. H. Tur-Sinai was in the chair. Prof. B. Mazar outlined the planned activities of the Society, and Mr. J. Aviram reported on the activities during the last year. Mr. H. Krongold gave a financial report. After a short discussion, the meeting approved the reports and elected Prof. Mazar President of the Society, to replace the late Prof. L. A. Mayer; Prof. Y. Yadin was elected Chairman of the Executive Committee.

After the completion of the official functions, the meeting heard a lecture by Dr. A. Malamat on *Egyptian-Israelite Relations at the Time of King Solomon*.

Foreign Expeditions

From April to June 1960, an Italian expedition carried out a second season

of excavations at Caesarea on behalf of the Istituto Lombardo di Scienze e Lettere di Milano. This year again it was headed by Prof. L. Crema, while Dr. A. Frova was field director. He was assisted by a number of Italian specialists.

An underwater expedition, sponsored by the America-Israel Society and directed by Mr. E. A. Link, arrived in Israel in June 1960 to carry out archaeological research in the sunken harbour of Caesarea and in the Sea of Galilee. Dr. C. T. Fritsch, Professor of Old Testament at the Princeton Theological Seminary, Princeton, New Jersey, and Dr. I Ben-Dor, Professor of Biblical Archaeology at Emory University, Atlanta, Georgia, participated on behalf of their respective institutions.

A number of prominent scholars from abroad visited Israel during the last months. Prof. Ann L. Perkins, of Yale University, delivered a number of lectures under the auspices of the Hebrew University, among them a public lecture on *Dura-Europos, Caravan City.*

Prof. S. Moscati, of the University of Rome, visited the country in connection with the participation of the Istituto per l'Oriente in the excavations at Tell Gath and of the Rome University in the excavations at Ramath Raḥel.

Mr. E. Elath has been elected President of the Israel Oriental Society, to replace the late Prof. L.A. Mayer.

OBITUARY

Gotthold Weil, who came to this country in 1935 from Germany, died in April 1960 at the age of 77. An orientalist, who graduated from the University of Berlin and the Hochschule für die Wissenschaft des Judentums, he served for many years as Director of the Oriental Department of the Prussian State Library in Berlin, while teaching and doing research work in Islamic philology at Berlin University. From 1931 to 1935 he was Professor of Semitic philology at the University of Frankfurt. In Israel, he was Professor of Arabic and Turkish philology at the Hebrew University's Institute of Oriental Studies since 1935. At the same time he was appointed Director of the Jewish National and University Library and served in this capacity until his retirement from this post in 1946. Prof. Weil published many important papers in the field of oriental studies and trained a great number of young orientalists in this country. He became Emeritus Professor in 1953. His death is regretted by his many friends, colleagues, and pupils.

A: General view. The small opening on the right leads to cave B: the bigger one on the left is artificial.

B: Cave A, at present inhabited.

A: Entrance to cave B.

B: Funnel filled with earth, leading to the entrance of cave B.

A: Courtyard and entrance wall of sanctuary.

B: Bearded head of terracotta figurine wearing Osiris head dress.

C: Limestone head crowned with myrtle.

A

B

C

D

A-B: Seated figures of bearded men wearing (A) conical, (B) cylindrical tiara.

C: Young female figure.

D: Small incense altar of limestone with sculptured lion supporter.

A

B

A-B: Figures of pregnant women.

C: Mother with child.

D: Male head with crenellation on top.

A: Terracotta Herakles figurine holding disklike object in his hand.

B: Crowned head and plank-shaped body of limestone statuettes.

A

B

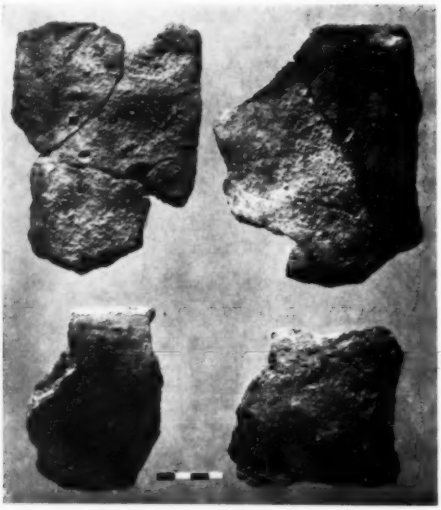
C

D

E

F

A-F: Hand-made bowls from site 108, Israel period II.



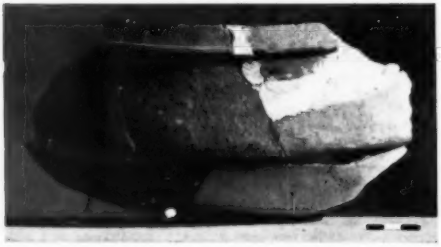
A

B

A-B: Hand-made bowls.
C-F: Wheel-made pottery.

C

D

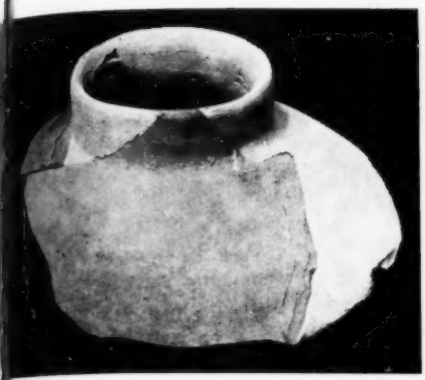


E

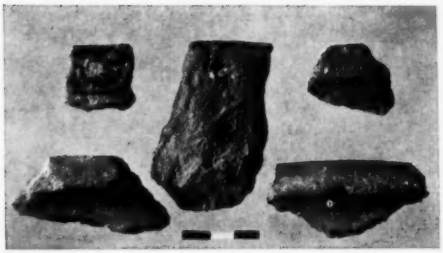
F

A-F: Pottery from site 108, Israel period II.

A-F: Israelite period II.



A: Store jar, site 108.



B: Rims of cooking-pots from sites 108, 114, 138, 144.

C

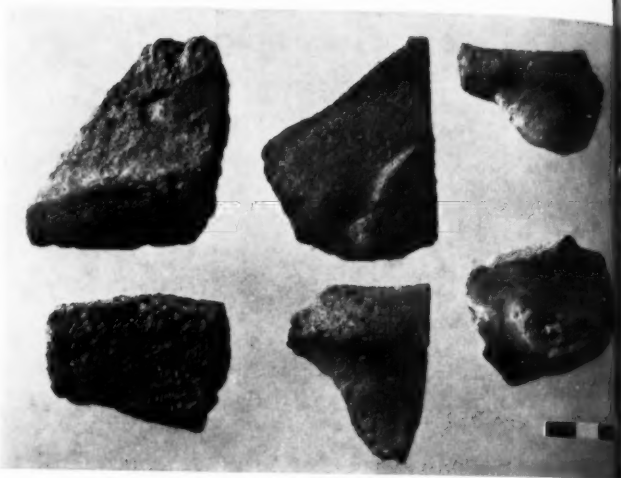
D

C-F: Stone implements from site 108.

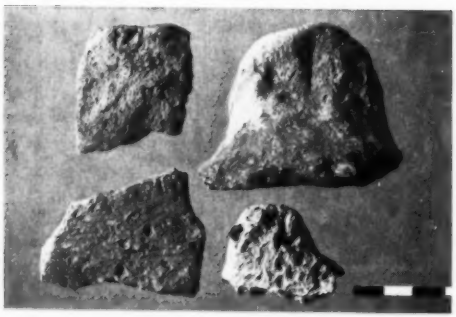
E

F

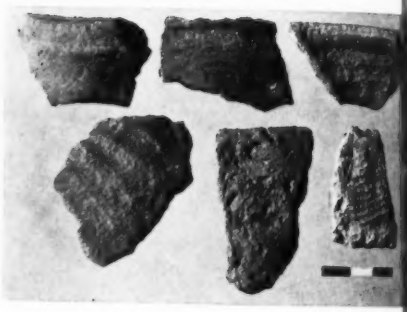
A-D: Israelite period II.



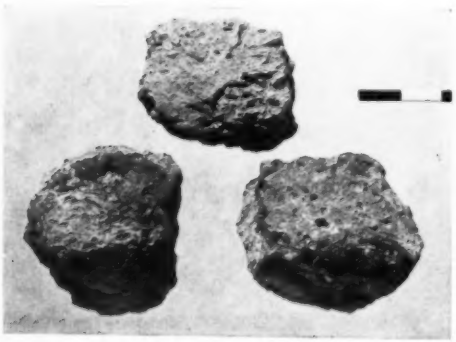
A: Hand-made and wheel-made pottery from site 158.



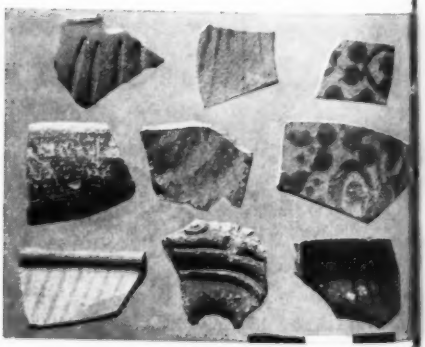
B: Hand-made pottery from site 122.



C: Hand-made and wheel-made pottery from site



D: Hand--made pottery from site 142.



E: Nabatean pottery from site 142.

ABBREVIATIONS

AAA	Annals of Archaeology and Anthropology, Liverpool
AASOR	Annual of the American Schools of Oriental Research
ADAJ	Annual of the Department of Antiquities of Jordan
AJA	American Journal of Archaeology
'Alon	Bulletin of the Israel Department of Antiquities
'Atiqot	'Atiqot, Journal of the Israel Department of Antiquities
BA	The Biblical Archaeologist
BASOR	Bulletin of the American Schools of Oriental Research
BIES	Bulletin of the Israel Exploration Society, continuing:
BJPES	Bulletin of the Jewish Palestine Exploration Society
CRAI	Comptes-rendus des Séances de l'Académie des Inscriptions et Belles-Lettres
EI	Eretz-Israel: Archaeological, Historical and Geographical Studies, published by the Israel Exploration Society
IEJ	Israel Exploration Journal
JAOS	Journal of the American Oriental Society
JBL	Journal of Biblical Literature
JEA	Journal of Egyptian Archaeology
JNES	Journal of Near Eastern Studies
JPOS	Journal of the Palestine Oriental Society
PEFA	Palestine Exploration Fund Annual
PEQ	Palestine Exploration Quarterly, continuing:
PEFQSt	Quarterly Statement of the Palestine Exploration Fund
PJb	Palästinajahrbuch des Deutschen evangelischen Instituts für Altertumswissenschaft des Heiligen Landes zu Jerusalem
QDAP	Quarterly of the Department of Antiquities in Palestine
RB	Revue Biblique
VT	Vetus Testamentum
ZDPV	Zeitschrift des Deutschen Palästina-Vereins
MT	Massoretic Text of the Old Testament

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